An Empirical Analysis of Selected Food Commodity Prices across Political Regimes

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DECLARATION

This is to certify that the dissertation entitled "An Empirical Analysis of Selected Food Commodity Prices across Political Regimes'' submitted by **Nehal Ahmad Khan** is accepted in its present form by The School of Economics, Quaid-I-Azam University Islamabad, Pakistan, as satisfying the dissertation requirement for the degree of M.Phil. in Economics.

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Author's Declaration

I **Nehal Ahmad Khan** hereby stated that my M.Phil. Thesis titled "An Empirical Analysis of Selected Food Commodity prices across Political Regimes'' is my own work and has not been submitted previously by me for taking any degree from Quaid-I-Azam University or anywhere else in the country/world.

At any time if my statement is found to be incorrect even after my Graduation University has the right to withdraw my M.Phil. Degree.

Nehal Ahmad Khan

DEDICATION

This dissertation is dedicated to my beloved parents who represented me 'living proof' of men's ability to redefine and recreate our lives despite, and maybe even because of, the tremendously constraining, oppressive and repressive situation in which we often exist.

Special Thanks

"What we do for ourselves dies with us, what we do for other remains and are immortal".

(Albert Pike)

I pay my special thanks to my respected younger brothers Yaseen and Sahil for their countless love, care,
Encouragement and support throughout my life.

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Nehal Ahmad Khan

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ABSTRACT

The current study compares the prices of selected food items among three regimes PPP, PML-N and PTI. Regimes Comparison examined through graphs and regression analysis. We have taken the prices of selected food items data monthly from Pakistan bureau of statistics, Pakistan economic survey and Index Mundi. The data varies from July 2008 to October 2021. We have selected 13 food items for the purpose of comparisons. The food items included Wheat, Rice Basmati Sup, Rice Basmati, Rise Basmati Broken, Rice Sindh / Panjab, Vegetable Ghee Tin, Vegetable Ghee Loos, Pulse Masoor Whole, Pulse Masoor Washed, Pulse Mong Washed, Pulse Mash Washed, Pulse Gram and Sugar Refined. For regression, we have taken the dependent variable as the absolute average prices of selected food items while independent variables have nominal diesel price and nominal interest rate with three dummy variables. PPP regime, PML-N regime and PTI regime. We have used ARDL Model based on OLS techniques for regression analysis in the short and long run. Graphs and dummies variables found the results about absolute price rising of selected food items among three regimes; the absolute average price is rising in the current regime compared the previous two regimes. However, the real prices of selected food items have more in the PPP regime as compared to the two regimes.

Chapter 1

Introduction

1.1 Background of the Study

During the last decade, the prices of all necessary food items increased, increasing of food prices threaten global food security, currently food inflation is hot debatable issues for economists. Recently Russia and Ukraine war adversely affect supply of foods such as Wheat and Maize; roughly, fifty countries depend upon thirty percent of Maize and Wheat that imports from Russia and Ukraine. Chief economist of food and agriculture (FAO) Maximo Torero has given statement, if the situation does not improve, world may face extreme shortages of foods in the near future.

Food and Agriculture organization (FAO) predicted that thirty percent of cereals disappeared and restricted access to fertilizer will the result lower production of foods. If the shortages of food supply that the demand of people more which is a negative impact on consumer welfare (World Bank, 2008). Currently inflation is a common phenomenon in the age of globalization and the agriculture revolution (Wodon *et al*. 2008). Different economists provided policies to negate the negative impact of inflation on consumer welfare (Sharma, 2007).

Adverse effect of Food inflation on consumer budget throughout the globe that attract economists to understand the dynamics of food inflation (Weersink *et al*. 2008). Abdullah and Kalim, (2016) explain of food inflation which is concerned with the policymakers; it depends on the movement policy, if the government has no control of food prices, its effect on poor families. On the other hand, that the rising of energy prices effectively raises the cost of production for farmers, is the result they forming less, which increase food inflation.

Poor people spend a bigger part of their income on food compared with rich people. It is equally valid for low and middle-income people. Specifically, low and middle-income people used their 40 percent of income on food while high-income nations used 20 percent of their income on food.

Pakistan has been experiencing double-digit inflation from 2005-2006 mainly due to the food prices rising at all levels of marketing, the shortage of food grain due to natural calamities, the repercussion of international prices, and political instability (Ahsan *et al*. 2011). A number of studies have been done on prices of food inflation (Lorie and Khan, 2006; Hye, 2009; Tiwari, 2010; Zhang and Law, 2010; Mushtaq *et*

al. 2011) these researchers mostly target the connection between monetary variables and food inflation, related research in the context of Pakistan food prices inflation is not a monetary phenomenon.

There are Some Factors, such as fiscal monetary policy, petroleum price, support prices, supply shocks, and export and import that affect food inflation such as food exports, food imports, which are helping to raise the prices of foods items (Abdullah and Kalim, 2011). When essential food items are exported to other countries with larger quantities its effects on food prices. is resulted in food inflation Particularly when developing countries export food items to other countries, the same commodities here in domestic shortage of supply and increase of demand is the result prices of food items increases; Increase price of kitchen food items such as Pulse, Ghee, Sugar, Rice-Wheat, etc. (Abdullah and Kaleem, 2009). The prices of all necessary food items, during the last decades, have raised such as the prices of pulses, rice, tea, wheat, and vegetables. That unfavorably affect consumer budget, which can consume on food items, which has hardly to fulfill it least minimum food requirement of their family members (Abdullah and Kaleem, 2009).

However, the most important food grain is Wheat, its prices go up with the passage of time, this cheap source of protein is also away from the poor (Rani *et al*. 2012). Wheat price inflation occurred due to the poor system of setup government, which is not maintaining check-in balance, wholesale dealers' stock of wheat for sake of rising future prices that they will earn more profit (Nair and Eapen, 2011). Empirically estimated wheat prices inflation, which has no significant relationship with monetary variables, means wheat prices inflation is not a monetary phenomenon in Pakistan (Azeem *et al*. 2012).

In the short-run Wheat price affected by export, support prices, and inflation expectations. Furthermore, the rise of petroleum and oil prices is greatly influencing agricultural production, Pakistan people party regime in 2008 wheat imported at a very high cost of $300 per ton, consumer prices index rose by 30% while Wheat prices increase by 20% (Ahmad, 2019). Additionally, the prices of food items rose up 270% in the years of 2000 to 2013, as well as from the years 2007 to 2009 wheat flour and rice price rose up to 200%, while the cost of onion, milk, and oil rose up to 150% (Sumner, 2016).

The prices of Wheat controlled through the government; government should be control exports of Wheat from one province to another as well as cross the border in

order to assure food security (Karusaki, 1996). Private and public partnership will emerge with each other efficiently and a viable way that they can intervene to control the prices of essentials items such as Wheat, Rice, Pulses, Tea, and Vegetables just like increases the production of food items, as well as band on exports those foods which have produced minimum quantities (Hassan *et al*. 2017). When the government subsidies food items that a negative impact on food inflation has because the prices of food will be falling for example sugar subsidies by the government that prices of sugar will be falling (Ahsan *et al*. 2012).

Additionally, when the government is going to impose taxes on food items, taxation has positive influences on food inflation, when tax increases as well as increase food inflation (Changchun and Sean, 2011). The reason is when taxes increases as increases the cost of production is the result of food items available in the market with the high price that cause food inflation.

Historically once Pakistan was efficient in the production of wheat and rice. However, after 1980, ultimately, production of wheat and rice was scarce, the reason, the prices of wheat and rice were falling internationally. Therefore, investment in agriculture was low as a result decrease in rice and wheat production (Gera, 2004). When food items prices rise internationally in 2007, international institutions force Pakistan to export food grain, as a result, wheat and rice surplus were already scarce. Along with agricultural land and agro-business bestowed to international institutions (Kugelman, 2010). No step was taken by the PPP Regime to control prices of food as increased wheat prices from Rs 400/40kg in 2004 to Rs630/40kg in 2008 (NPC, 2009). Usually, wheat prices were low domestically but it smuggling across the border so is the result prices high.

The price of Essential foods like Wheat, Ghee, Rice, Tea, Pulse, etc. are effect by some macro variables, directly and indirectly, some factors are; gross domestic product (GDP). If GDP growth is increasing as food inflation decreases, a negative connection between inflation and gross domestic product (Adnan and Ali, 2014). Many past studies find the impact of GDP on food inflation was positive while litter on numerous studies shows a negative bond between the GDP and food inflation.

Chand (2010) said that the factors, which can accelerate food inflation in PPP Regime 2009 abnormally, price high levels. Such factors are trade, international prices, speculative activities, food management, and shocks in supply, some of the factors in

the short-run and some of them in long run, and some factors in both the short and long run are influencing food inflation.

Hussain and Rashid, (2006) argue that Pakistan is still at inflation problems; in 1980 inflation rate in Pakistan was 7.2. Which was considered one of the moderate inflation rates in Pakistan but with the passage of time inflation rate was rising, which effect essential food items prices, this inflation was rising because the state bank of Pakistan was printing money too much. Qayyum and Sultana (2018) said There are many factors that push up the inflation rate, these factors may macroeconomic policies, rising in income, prices of oil rising in the international market, prices rise of international commodities, increases in the demand of domestic goods, which effect on food inflation.

Pakistan Tehreek- e-Insaf tenure in 2019, the COVID pandemic emerge and affect the whole world. When COVID -19 arose in the world, it suffered every aspect of life, especially in developing countries damage a lot regarding economically, socially, politically, and religiously. Non-pharmaceutical measures like suspension on transportation, shut down economic activities due to covid-19 rising inflation particularly food inflation.

A very worst situation in Pakistan due to COVID-19, people are facing problems due to shortage of food items, the prices of food items increase in the pandemic, majority of people unable to fulfill their sustenance because of food inflation (Khan, 2021). Sareen (2020) argues Before covid-19 Pakistan, the economy was struggling to come out of economic crises but when corona emerge is the result Pakistan economy shrink; people are facing inflation problem, almost all of the nations the victim of a pandemic but Pakistan does not have the capacity to protect people and help them economically.

Common people in the society, they are concerned with absolute prices in the market. In the current regime nonprofessional, make a narrative against the current regime that the prices of all necessary food items increased during this regime. So being an economic student, I am interested to check absolute and real prices of food items among three regimes Pakistan People Party, Pakistan Muslim League and Pakistan Tehreek-e-Insaf, rising food inflation concerned each regime or, rising food inflation over time across the regimes.

1.2 Problem Statement

Issues of food inflation in Pakistan across political regimes that three regimes have been under the consideration; Pakistan People Party (PPP), Pakistan Muslim League Nawaz (PMLN) and Pakistan Tehreek-e-Insaf (PTI).

The problem of food inflation actually rose during the PPP tenure in 2008. Wheat price increased 270 percent; inflation moved up due to the food inflation, the cost of inflation hurts people in the society. In the month of dec-2008 inflation rate has recoded 8.8 percent, after the one month reported inflation rate jumped to 20.5 percent and 21.1 percent in jan-feb-2009. In the month, 30-july 2009 inflation reached to peak as 25.1 percent, this was the highest inflation rate in the PPP regime. Upgraded inflation due to many factors such as financial crises, shortage of oil, natural disaster.

The end of PPP tenure food inflation was recorded 7.30 percent. Food inflation has quite lower in the PMLN regime but the overall condition has not well, because there was a big hole between the expenditure and revenue, it was created shortfall, fiscal deficit reached to 5.8 percent of the GDP in 20017-18.

Food inflation under the PTI regime, according to the data pf Pakistan Bureau statistics consumer price index 4.5perecent in May 2018 end of PMLN tenure. Food inflation in PTI regime 23.8 percent in rural area and 19.5 percent in urban area in 2020. This was the second shocks in political regime; common people suffered a lot from the increasing prices of necessary food that adverse effect of consumer budget.

1.3 Research Objective:

Compares the price of selected food items across three regimes). Pakistan People Party, Pakistan Muslim League and Pakistan Tehreek-e-Insaf, to compare prices of selected food fixed to each regime or stationary over time among the regimes.

1.4 Research Question:

Whether the price of selected food items is regime specific or its movement is the same across three regimes (PPP, MPL-N, and PTI).

1.5 Hypothesis of the Study:

It is predictable that selected food items' prices rise in the current regime (PTI).

1.6 Significance of the Study:

- Study explained the performance of three regimes PPP, PMLN and PTI
- Study explored the reality in which regimes prices of selected foods low and high
- Study showed market prices increased over time while real prices of selected food has specific to each regime

1.7 Layout of the study

There are six chapters of my dissertation, which are the following

- ✓ Literature Review
- ✓ Economic performance of Political Regime: 2008 to 2021
- ✓ Economics Theory Framework
- ✓ Data and Methodology
- ✓ Results and Discussions
- ✓ Conclusion And Policy Recommendation

Chapter 2

Literature Review

Wodon *et al*. (2008) and World Bank, (2008) examined the potential influence of higher food items prices on poverty in sub-Saharan Africa. In addition, the research question that which policy responses will advantage the poor. The results show rising food prices are probably going to prompt higher poverty in Sub-Saharan Africa as an adverse consequence on net purchasers.

One analysis about the prices of food items raised in worldwide business sectors during 2007-2012 Germán *et al*. (2018) tried whether rising food prices affected family food poverty in 26 European Union (EU) part states. Taken longitudinal data from the Statistics for Income and Living Conditions. They had used Population-averaged models; Results revealed a critical connection among food scarcity, purchaser's food prices index and disposable income. In the research, Results showed that low-pay families in thickly populated regions were defenseless against food scarcity. They are given policy to start food help program to help the poor families.

One study has made by Elobeid *et al*. (2006) analyzed the elements influencing food prices in the US. Using Time series data for the period of 1950 to 2000. The author's investigation showed that farmers get just 19 pennies of each dollar spent on food items, staying 81 pennies is another expense like transportation, dressing, etc. In addition, the prices of energy and food inflation connection with each other as the result affects the price of food times. They suggested the price of energy sold at a low cost.

Setiawan and Hadianto, (2014) examine the fluctuation of food prices like Corn, Rice, Curly Red Chili, Onion, Beef, Layer Eggs, and Chicken Meat, in addition, checked the effect of prices of commodities in Banten. Using descriptive analysis for price fluctuation and using the VAR model for regression analysis. In the descriptive analysis, the result shows that rises in food prices such as Corn, Rice, Curly Red Chili, Onion, Beef Layer Eggs, and Chicken Meat show an upward trend. In the VAR model analysis has given the result in the short-run, there is only curly Red Chili, which has a significant impact on inflation. In the long-run, six goods have an influence on inflation significantly.

Investigated by Ilman *et al*. (2020) the effect of the prices of Meat, Chili, Rice, and Chicken Meat on the volatile inflation rate in Indonesia province Nusa Tenggara Barat. Time-series data taken from 2009 to 2018 and a linear regression model has been used, the model, the volatile inflation rate variable was considered dependent while the prices of Chili, Chicken Meat, and Rice were considered as independent

variables, after the regression the relationship between volatile inflation rate And Chicken Meat, Chili, and Rice. The results were showing no one can significance related to volatile food inflation.

Lee and park, (2013) examine the dynamic international prices of food items and volatile inflation rate. Second examining internal and external factors food prices and volatile inflation rate. The authors have chosen 75 countries; they have taken data from 200 to 2011. Finding to research in Asia, domestic food price inflation is significantly associated with the lagged value of international food prices inflation. The second finding in the research domestic food price inflation strongly correlated with volatiles inflation, so the author has given suggestions based on the finding, higher economic growth rate leads higher share of food in merchandise imports. While a small number of sharing food in merchandise, imports lead to lower domestic inflation of food prices. Greater political stability, appreciation of the domestic currency, high-income level to lead a lower rate of food inflation domestically, and on the other side leads to lower volatilities of food inflation by a higher rate of economic growth.

There are various viewpoints about explanations behind food inflation according to monetarists Economists resist the extra money printing by Government as the justification for food inflation. Yet another event Government resists those changes and worldwide effects are the essential drivers of food inflation. In Pakistan, Food inflation is a distinctive phenomenon (Awan and Imran, 2015).

Ashley *et al*. (2011) investigated the high food inflation and wiping out of economies, particularly Arab countries. They used time-series data varies from 2001 to 2010 for examination. The researcher included exogenous factors GDP per capita, inequality income, and political disorder (dictator or larger part runs framework) in the model. Their result presented that food inflation was high in the dictator economies like Egypt, Syria, and Tunisia while a larger part administers framework had antagonistic results on inflation on food.

Adam *et al*. (2012) studied Tanzania's inflation the food esteem. They used their assessment has taken time-series data varies from 2002 to 2011. The outcome presented that components such as shocks of supply, fuel costs, stockpiling, the policy of monetary, and the rate of exchange was accountable for continuous Tanzania food inflation. (Haji and Gelaw, 2012) covered the factors of food prices in Ethiopia. The economy of Ethiopia stood up to exotic food prices while non-food prices were largely

steady. Food inflation was in 2006 15.1 percent and it showed up in 2008 at 57.4 percent; though, it was mostly low in 2009 at 36.4 percent. Authors contemplated that supply of money, rate of exchange, worldwide costs; the costs of fertilizer are the components liable for the rise in prices of the food.

Dua and Goel, (2021) examine the determinants of food inflation and general inflation in India. It has taken monthly data from April 1996 to March 2017. The study covers both CPI-IW and WPI food inflation. The study utilizes the co-integration method to deal with distinguishing the factors of food inflation in India. Exact assessments of the study show that there is a long-run connection between inflation and its determinants which are expected inflation, output gap, growth rate supply of money, rate of exchange, rate of interest, fiscal deficit, support of minimum prices, rainfall of global oil and prices of food.

Husaini and lean, (2021) examine the asymmetric effect of both oil prices and exchange rate on the disaggregate food inflation in Indonesia, Malaysia, and Thailand. Considering that every nation has its own economic design, the effect of oil prices and inflation rate fluctuation on the prices of food items level might vary across the nations. The authors track down that an increment in oil prices greatly affects the producer's prices index (PPI) than the consumer prices index in all nations. However, a reduction in the oil prices is just critical in decreasing both CPI and PPI in Thailand. In addition, an increase in the exchange rate (currency depreciation) is causing significant both the CPI and PPI altogether nations. In any case, a decrease in the exchange rate (currency appreciation) ignored to decrease both the CPI and PPI in all nations. The authors suggest that policymakers proceed with their energy incentive programs, though, the distribution of increased energy ought to be improved that get benefit altogether groups.

Agye *et al*. (2021) Analysis of the effect of coronavirus disease covid-19 on prices of maize imported rice and sorghum in SSA (sub- Saharan Africa). They have used a dynamic penal data model, regarding controls for macroeconomic settings using general method moment estimation. The study found that increases food items prices in COVID-19. The study also found that food prices affect by inflation, exchange rate, and crude oil prices. Authors have given some suggestions, to the regime of SSA countries, the following suggestions are government should invest in infrastructure, as the result, it will improve the efficiency of the food chain, especially in the pandemic, and the second suggestion is government should be support industries that can increase food availability and maintain food prices during the COVID-19.

Espitia *et al*. (2020) would check the impact of COVID-19 of trade policies on world food prices. They assume that initially, shock occurs due to the covid-19 on labor-intensive goods, and then estimate how rising export restrictions affect domestic food the first shocks. The result shows that increasing COVID-19 virus which increases the prices between 2 to 6 percent on average, increasing of exports restriction which leads to the multiple fruit shocks by 3 percent that the world food prices rise by 18 percent on average, those countries which imported goods from foreign which can be effect more in a pandemic.

Batool *et al*. (2021) proposed that the COVID-19 pandemic has upset the economies around the world, implying that the monetary aftermath from preventive measures, for example, lockdowns is tremendous. Asghar *et al*. (2020) contended that this is the economic slump since the Great Depression of the 1930s. Coronavirus addresses another sort of COVID-19 that moves quickly from one human to another and started scattering in Wuhan China late December 2019. In addition, in under a month, the (WHO) announced COVID-19 as a "general safety calamity of global concern" (WHO, 2020). On 11 March 2020, the WHO announced COVID-19 a worldwide pandemic because of its overall spread and its staggering worldwide effect.

One study by Habib *et al*. (2021) examine prices volatility factors for selected food items in Pakistan. Data took over the period from June 1983 to June 2018. The GARCH (1, 1) models used to assess all factors by utilizing normal and student t-distribution tests. Further, to elaborate the dynamics of conditional volatility for agriculture goods versus food items prices and clarify the dissemination between the two items. Results in the research presumed that the volatility impact of interest and exchange rate effects on selected products. Further, the volatility of wheat prices essentially influences the value series of the rice.

Awan and Imran, (2015) review the objective of the review is to break down the interest rate and cost-push factors that impact food costs inflation. The authors use time series yearly data from 1980-to 2013. Data taken from the world's development indicators and Pakistan economic survey. The researcher applied the ADF test, Johansen's co-integration test methods, and VECM for long-run and short-run connections between the components. The result got from the double log model examines that large interest rate and cost-push variables are compost, fuel costs, money supply, per capita GDP, and unfamiliar guide, which are decidedly related to food costs while foreign aid is adversely related to food costs in Pakistan.

Azeem *et al*. (2012) conveyed the purposes behind wheat regarding inflation in Pakistan. They used educational factors previous year costs, oil costs, money supply, and wheat costs for the assessment of time series data from 1981 to 2010. Their finding showed that money supply is irrelevant to wheat costs while all excess factors are critical.

Hanif, (2012) coordinated a survey from the state bank of Pakistan stage on food inflation in Pakistan. The expert examined the data from January 1992 to January 2012. The finding of the audit was the world food prices paralyzes extraordinarily impact the costs of food in Pakistan, during the latest multi-decade various factors like rains and floods moreover make supply shocks which make high inflation in food region. He moreover discovers that a larger piece of the associations in Pakistan is using old strategies at setting the costs that are focal clarification that cutting down the costs do not strongly convey to customers.

One more national examination on inflation as Khan *et al*. (2007) saw that cheapening in the exchange rate and government acquiring is making food inflation in Pakistan while wheat support charges are unimportant to food inflation. Chaudhry and Chaudhry, (2008) focused on the impact of rising food and oil prices on the destitution of Pakistan. Their finding showed that increasing expenses of oil and food hugely influence the desperation of Pakistan. World food program, (2009) itemized that 30% of purchasing power of work reduces in terms of wheat flour after 2007 because of rising food costs.

Salman and Adnan, (2013) broke down that money supply, GDP growth, and food send trade is at risk for food inflation in Pakistan while credit scattered to cultivating region is antagonistically associated with food costs. Kemal, (2006) in paper finds that inflation occurred because of the money supply with the passage of time higher pace of inflation. It develops that inflation is essentially a money-related phenomenon. Nevertheless, the money supply does not right away affect the costs levels; the impact of money supply on inflation has a huge margin of around 9 months. While the review shows that the money supply works through the structure in less than a year, it similarly points out that the framework takes genuinely long to unite to balance if shocks appear in any of the three factors, viz., GDP, money supply, and costs.

Qasim *et al*. (2021) measure of inflation in Pakistan used four prices indicators, for example, CPI, WPI, SPI, and GDP Deflator for the long run (time-frame of 1971-72 to 2005-06). It discovered that devaluation of exchange rate and increased value of

imports has contributed to shooting up of CPI, WPI, SPI, and GDP deflator. The help prices of sugarcane, rice, wheat, and cotton (aggregately) have influenced every one of the indicators positively; the support price of wheat freely has influenced just GDP deflator.

The author's outcomes clarify that the budget deficit has assumed no part in boosting every one of the four indicators of inflation in Pakistan over the long run. One study design in Pakistan by FAO, (2008) utilizing household integrated economic survey data for the period of 2005 to 2006 based on the partial equilibrium simulation model, finding in this research surveyed the effect of price twisting and food deficiencies on the business and general welfare of Pakistani families, especially defenseless and underestimated ones. This study's discoveries showed that the greater part of the studied families experienced high food prices as a shock. People are claiming the prices of food items increased current regime in Pakistan compared to the other two regimes, it will check in reality whether food items prices are regime specific or its movement across the same regimes.

Chapter 3
Economic Performance of Political Regime: 2008 to 2021

3.1. Economic Performance of PPP Regime: 2008 to 2013

The manifesto PPP of (Roti, Kapra, and Makan) in spite of the fact that the PPP regime showed an easing trend of inflation, and food inflation had been beginning in November 2008. It may note that the phenomenon of rising food prices PPP regime was a question of significant worry to the Government and Common people in the society.

Rising food costs have constrained the general inflation to climb in this manner adding to the financial enduring of the residents overall and the unfortunate families specifically. This pattern keeps on continuing from the PPP Regime; the expense will be significantly something else for both the economy and society in general. The stream in costs may likewise be areas of strength for a component, because of its profound effect on major macroeconomic factors like inflation, the financial deficiency and equilibrium of installment, growth, destitution, and income distribution. Pakistan economic survey reporting in (chapter 6, 2009) in the month of dec-2008, inflation was 8.8 percent; the monthly inflation rate was jumping into 20.5 and 21.1 percent in the months of Jan- Feb- 2009.

In the PPP regime, the inflation rate has gone to 21.1 and then showed a downward trend of 17.2 percent in April-2009. In August 2009, the inflation rate jumped into 25.1 percent, it was the peak inflation rate in 2009.

30 July 2009 Pakistan greatly suffered from a natural disaster, which causes the scarcity of foods items and the problem of transportation as well as the shortage of oils, it can create supply-side shock inflation. The second big issue was the financial crisis (During the worldwide financial crisis of 2008, a negative demanded shock in the United States economy, it was brought by a few factors that included falling house costs, subprime mortgage crisis, and lost family wealth, which encouraged a drop-in customer spending) In the world. Its effects on Pakistan's economy; the PPP government was facing three big issues such as terrorism, floods, and international crises so are the result an inflation rate high. In January 2010-inflation, the rate fell to 13percent. Pakistan economic survey reporting in (chapter 7, 2013) it lowest inflation rate in the PPP Regime was 7.9 percent in Jan-Feb-2013, in the last month of PPP tenure the inflation rate in March was 8.5 percent.

3.2 Economic Performance of PMLN Regime: 2013 to 2018

General Election of 2013 PMLN came into power in June 2013 selected for five years tenure; Main Muhammad Nawaz Sharif became the prime minister of Pakistan. Pakistan economic survey reporting in (chapter 7, 2016) Inflation rate controlled, the economic activities running well, the inflation rate was 8.3 percent in July-2013 and coming month little increase to 8.5 percent and next month inflation rate was reduced to 7.4 percent, despite its bad economic performance, the PMLN government has made some economic strides. Owing to CPEC and the relatively improved security condition, the country's economic growth has reached nearly five percent. The government has prevailed about diminishing the inflation rate to four percent. The officeholder government has neglected to determine, the absolute most overwhelming difficulties catching the economy.

The most squeezing challenge that tenure the economy is the consistently expanding fiscal deficit. Pakistan economic survey reporting in (chapter 7, 2018) The nation's financial plan shortfall has reached around 5.8 percent of the GDP and is projected to ascend to around eight percent toward the finish of 2017-18. Worryingly, this 5.8 percent financial deficiency does exclude the round obligations of RS400 bn. In spite of the fact that there is an enlarging hole, between the government expenditure and income. The PMLN has kept on showing hesitance to reduce the generous expenses of its service.

The occupant bureau has around 50 ministers and a pile of guides. The government ought to embrace uncommon grimness measures by diminishing the number of its services, bringing down its import charges, and dispensing with day-by-day corruption of RS12 billion. Any interruption could slide the country toward a 1999-like circumstance when the budget deficit arrived at an unmanageable level. At whatever point the government runs low on financial assets, it nearsightedly depends on getting cash rather than expanding tax collection and diminishing its superfluous consumptions. Because of such continued borrowing, the nation's complete obligation has reached RS25 trillion contrasted and RS14.8 trillion out of 2013.

The bleak condition of the economy shows that the government will before long thump on the IMF's door for another bailout bundle to pad the falling place of the economy. In 2018 began with headline inflation (CPI) at 2.9 percent in July, which

crawled up to 3.4 percent in August 2017 and 3.9 percent in September. The diminishing pattern during FY2018 can be credited to costs of mash pulse 25.71 percent, gram pulse 18.52 percent, moong pulse 17.99 percent, masoor pulse 17.95 percent, and sugar 17.50 percent. CPI Inflation 2015-16 2016-17 subdued food prices, which offset the impact of the rise in petroleum rates.

3.3. Economics Performance of PTI regime: 2018 to 2021

The PTI narrative about the rising price climbs presently notable. It trusts that this peculiarity is because of overall inflation affecting Pakistan through import costs and deterioration money, pandemic-related disturbance of the inventory network, and cartels impacting food supplies and costs. The costs in the agribusiness and food areas likewise being hit hard because of rising info costs, with the costs of fuel, transportation, and capacity. In any case, this talk does not permit the public authority to zero in on the underlying issues that are prompting, for instance, deficiencies of wheat and sugar in spite of liberal imports.

An extremely terrible circumstance in Pakistan because of COVID-19, individuals are dealing with issues meanwhile lack of food things, the costs of food things expansion in the pandemic, larger part of individuals are unfit to satisfy their food due to food inflation (Khan, 2021).

Pakistan economic survey reporting in (chapter 7, 2021) The efficiency holes in the agribusiness and agro-handling area have brought about Pakistan becoming one of the biggest food shippers in the locale. Rising of food price due to many reasons such as tax regime, price monitoring systems, cartelization in agriculture and food markets, weak evaluation of the effectiveness of (sasta bazaar, itwaar bazaar, and Ehsass Roshni scheme) and weak performance of economic affair institution of Pakistan and covid-19 pandemic these factors can explain one by one:

3.3.1. Weak Performance of Economic Affairs Institution:

Relevant economic affairs institutions poor understand the detrimental effects that unpredicted border closures have on trade with neighbors, and supplies of important food items and prices. Pakistan nonstop to see high food items prices due to the route trade between India and Pakistan had stopped. Likewise, disturbances in trade with Afghanistan and Iran also contribute to creating uncertainty in the food sector.

3.3.2. Tax Regime

A weak system of the tax regime faced by the agriculture sector is the result it contributes to rising in the price of food items. There are federal, provincial, and local taxes and often there is repetition in the supply chain that does not let prices come down.

3.3.3. Gaps in the Price Monitoring Systems

There are breaks in the price monitoring systems, which are well known. The instruments to forecast demand and the prices of essential food items do not exist at the sub-national level. The public sector has been verified to be a weak manager of buffer stocks in wheat and sugar due to a lack of robust inter-provincial coordination.

3.3.4. Cartelization in Agriculture and Food Markets

Cartelization in agriculture and food markets will continue to go unchecked unless stronger legislation and punishing measures are put in place. A greater challenge is to give teeth to bodies answerable to protect consumers, including the Competition Commission of Pakistan (CCP) and consumer courts.

3.3.5. Weak Evaluation Effectiveness of Sasta Bazaar Itwar Bazaar Ehsass Roshni Scheme

Evaluation into the effectiveness of Sasta Bazaars, Ehsaas Roshni Scheme, Itwar Bazaars, Online Price Apps, and Online Price Complaint Apps. Currently, there are reports of such bazaars carrying poor quality only to fulfill with lower than market prices.

3.3.6. Weak Economic Affairs Institutions

Relevant economic affairs institutions need to understand the detrimental effects that abrupt border closures have on trade with neighbors, and supplies of essential items and prices. Pakistan continued to see high food prices, land route trade between India and Pakistan had stopped. In addition, disruptions in trade with Afghanistan and Iran also contribute to uncertainty in the food sector.

Chapter 4

Economics Theory Framework

4.1 Definition:

A situation where refers a broad price index increases on behalf of balancing total prices for services and goods in the economy.

The broad price index consists of The Consumer Price Index (CPI), the Personal consumption expenditures price index (PCEPI), and the GDP deflator.

4.2 Classical Theory of Inflation:

The classical theory of inflation ascribes proceeded price inflation to the over-the-top development of cash available for use. Subsequently, a classical theory is occasionally called the "quantity theory of money," despite the fact that it is a classical theory of inflation, not a theory of money.

All the more explicitly, the classical theory of inflation explains how the aggregate price level is entirely settled through the cooperation between money demand and money supply.

(Sargent, 1982) clarified that support of the classical theory is presented in famous studies, which emphasize on the hyperinflationary episodes that have happened in various places at various times during world economic history. In each one of these episodes, where inflation rates in excess of a hundred percent per year can be observed, these high rates of inflation are inevitably accompanied by equally high rates of growth in the money supply.

In addition, in each one of these episodes, hyperinflation has been seen to stop as soon as the central bank takes conclusive action to confine the monetary extension. Therefore, these episodes come close to being controlled, through laboratory experiments in which the independent variable money growth is intentionally operated holding all else constant, and the dependent variable inflation changes in accordance with the predictions of the per theory.

4.3 Keynesian Theory of Inflation:

Keynes one of the best economist of the twentieth century relates inflation to a price level that appears after phase of the full employment while the quantity approach underscores the volume of money to be liable for ascending in the price level.

Keynes separates between two kinds of inflation in price; one, inflation in price joined by an expansion underway. Second, inflation in price is not joined by an expansion underway. On the off chance that an economy is functional at a low level, with an enormous amount of jobless men and unutilized assets then inflation in money. a few different reasons prompting an ascent demand will result not just in that frame of mind in the price level yet additionally in inflation in the limit of labor and products in an economy. This will go on until all jobless men find administration and capital and different assets are all the more completely used, i.e., the phase of full employment. Past this stage, however, any ascent in the volume of money or ascend demand will prompt inflation in costs with a comparing ascend underway or business.

Keynes expresses that (Froyen, 2013) the underlying inflation in costs up to the phase of full employment has something beneficial for the country since there is an ascent in result and business. Reflation or fractional inflation is utilized to choose such an expansion in the cost level. The expansion in costs after the phase of full business is terrible for the country since there is no comparable expansion underway or work.

Inflation is utilized to communicate such an expansion in the price level. Thus, inflation alludes to an expansion in the cost level after full employment has been achieved. As per Keynes, inflation" can be reasonable to an immature nation where joblessness of men and assets exist side by side with the inflationary inflation in costs. This is because of the presence of bottlenecks, like the restricted measure of capital, apparatus, transport offices, and the shortfall of specialized ability. Due to these bottlenecks and deficiencies, an ascent in the cost level may not prompt an expanded result past a specific stage, despite the fact that the nation might not have contacted the phase of full employment.

4.4 Monetarist Theory of Inflation

Monetarists say that if the Money Supply increases faster than the rate of growth of national income, then there will be inflation. If the money supply increases in line with real, output then there will be no inflation.

(Friedman, 1970) stated, "Inflation is always and everywhere a monetary phenomenon in the sense that it is and can be produced only by a more rapid increase in the quantity of money than in output, (Friedman, 1970) Counter-Revolution in Monetary Theory.

Quantity Theory of Money

Fischer Version MV=PT,

- M = Money Supply
- V= Velocity of circulation
- P= Price Level and
- T = Transactions.

T is difficult to measure therefore it is often substituted for Y = National Income

MV = PY where Y =national output

The above condition should hold the worth of use on labor and products should rise to the worth of the result.

Monetarists trust that the short-run velocity (V) is fixed this is because the rate at which money is still up in the air by institutional elements, for example how frequently laborers are paid does not change definitely. Milton Friedman let it be known that could differ somewhat yet not definitely, so it tends to be treated as fixed, (Pettinger, 2017). Monetarists likewise accept yield Y is fixed. They state it might shift in the short run however not over the long haul (because LRAS is not entirely set in stone by supply-side variables.) Therefore, an expansion in the Money Supply will prompt an expansion in inflation (Froyen, 2013).

4.5 Interest Rate VS Inflation

The Fisher Effect is an economic theory formed by economist Irving Fisher that describes the connection between inflation and both real and nominal interest rates. The Fisher Effect states that the real interest rate minus the expected inflation rate. Thus, real interest rates fall as inflation increases, unless nominal rates increase at the same rate as inflation. (Froyen, 2013).

4.6 Food Inflation

The definition of food inflation, the situation of a rise in the wholesale price index of a necessary food item relative to the general index or the consumer price index (CPI) is called food inflation. In nonprofessional's linguistics, it is the increase in the cost of a necessary food item relative to the past price, (Hathaway, 1974).

Food inflation has two implications; it implies one thing in industrial nation nations and one more for immature/emerging nations. In industrial nations, the ascent in the food costs causes a little bother, something to moan while with inflation in the food costs in non-industrial nations, individuals probably will not get adequate sums to eat and should starve for food. Food inflation is very unstable. The unpredictability really relies upon horticultural costs, as the adjustment of the climate, supply, and demand in the rural area will generally fluctuate.

4.7 What causes Food Inflation?

Environment changes are most elevated on the rundown as the justification for food inflation. Change in the environment brings about outrageous atmospheric conditions. It causes ozone-harming substance outflows, collects the intensity in the environment, and thus makes the temperature climb. The hot air begins to retain more dampness content in the climate. Water from the lakes and streams vanishes, and the land evaporates. Also, when it rains, the water doesn't get retained yet rather runs off the dirt and causes floods. Thusly, it influences farming, and subsequently, food costs rise.

Transportation is one more variable that makes food costs expand. As the oil costs increment, transportation costs additionally increment, and in the end, the food costs too.

Corn is currently being utilized as a biofuel. The majority of the corn production is spent in the development of biofuel and corn production as a type of consumable is fundamentally less. Subsequently, inflation.

The interest in meat has raised a considerable amount throughout the long term. In this way, the animal, which feeds on meat, is currently taking care of grains. Subsequently, crop demand increments while supply is less. Subsequently, inflation in costs.

4.8 Effects of Food Inflation

The essential impact of food inflation is the expansion in the price index (CPI) where CPI is a record that actions the adjustment of the price level of a market bushel of buyer labor and products. It should be noticed that food inflation influences distinctively various individuals. The ones that are harmed are the people who import a lot of food and the families who spend a lot of their pay on food. Conversely, the ones who send out food things are tremendously impacted by the expansion in food costs.

Economy of the Nation is impacted by the ascent in food costs. It can have great and awful impacts too. On the off chance that inflation is at a moderate level, the economy might support itself. Notwithstanding, assuming the food costs rise higher, the economy is seriously impacted. This present circumstance is typically witnessed in non-industrial nations. Food inflation likewise influences GDP growth. Not fundamentally, yet one of the variables influences it.

Chapter 5

Data and Methodology

5.1 Introduction

Currently, food inflation has a hot issue; it has an adverse effect on common people in society, food inflation increased during the PPP regime and PTI regime. People remember current prices and researchers believed the real price of food items. Therefore, we will find the answer above statement in which political regime prices are high and low. For that, we will design the following structure as a theoretical framework, empirical model, description of variables, data and estimation techniques.

5.2 Theoretical Framework

We have covered two procedures of comparing price-selected food items for three political regimes. The first procedure covered through graphs while the second procedure done through regression for regression we use ARDL model.

An autoregressive distributed lag (ARDL) model is an ordinary least square (OLS) based model, which is valid for both non-stationary time series as well as for times series with mixed order of integration or all variables at first difference or level.

The ARDL model is used to analyze co-integration series for short-run and long-run dynamics. the ARDL model contains the lags value of the dependent variable, and the current and lags value of the regressors as explanatory variables, the good point in the ARDL model is that if the sample size is small it is also able ARDL to run the model while Johnson con-integration model only large sample size.

Before the run of the ARDL model, it would be necessary to have variables stationary at level or first difference or mixed than we are able to run the model, no variable should be in second difference. The variables may include a mixture of stationary and non-stationary time series.

Before applying the statistical models, each dataset was checked for stationarity (i.e., if the mean and variance are constant over time). We check this stationarity by using the Augmented Dickey-Fuller (ADF) test for stationarity. Any dataset that is not stationary is different using the formula

$$\Delta yt = yt - yt - 1$$

the following procedure for the stationarity test mentioned below;

Unit Root (Test for Stationarity). A time-series data is stationary assuming that its mean and variance are consistent over a period, while the value of the covariance between

double-cross, periods relies just upon the gap between the periods and not the actual time at which this covariance s considered. On the off chance that either of these conditions not fulfilled, then, at that point, the interaction is supposed to be nonstationary. The stationarity of a time series data can research by applying the Increased Dickey-Fuller (ADF) test.

ARDL Approach to Co-integration. In assessing the ARDL model, the best length (p) chosen by utilizing the Akaike Information while guaranteeing that the error is white noise. Time series Ht called white noise Ht is an arrangement of identically distributed and free arbitrary factors with consistent mean and variance. After the assurance of the length of the appropriate lags, the ARDL model is then specified and assessed.

To apply the ARDL methodology, we first perform the unit root test for three-time series variables in the study to set up whether or not they are fixed. For this review, the Augmented Dickey-Fuller (ADF) unit root test applied for this reason.

5.3 Empirical Model

In the utilization of the ADF test, three regression structures produced.

$$\Delta y_t = \beta_1 y_{t-1} + \sum^{p}_{j-I} \alpha_j \Delta y_{t-j} + \mu_t \ldots 1$$

$$\Delta y_t = \beta_0 + \beta_1 y_{t-1} + \sum^{p}_{j-I} \alpha_j \Delta y_{t-j} + \mu_t \ldots 2$$

$$\Delta y_t = \beta_0 + \beta_1 y_{t-1} + \alpha t + \sum^{p}_{j-I} \alpha_j \Delta y_{t-j} + \mu_t \ldots 3$$

Where μ_t are white noise errors. The extra lagged terms are included in the model to ensure that errors are uncorrelated.

ADF test depends on the following hypothesis:

(H0) y_t isn't 1(0) or y_t is nonstationary.

(H1) is y_t (0) or y_t is stationary.

To close on the test, we look at the determined ADF test with the basic qualities from Fuller's table. On the off chance, that the test statistic is less than the critical value, which considered in the thesis, is five percent, then, at that point, where the null hypothesis is not rejected and we infer that the series is nonstationary or not integrated of order zero. The H0 value of the test can likewise measure up to the degree of

significance for making this inference. Assuming a variable is stationary without differencing, we say it is integrated of order zero, and assuming that it is stationary just after the first difference we say it is coordinated of order one.

The following is a depiction of the ARDL model is general model form;

$$Y_t = \beta_0 + \beta_1 y_{t-1} + \alpha_{1\,t} x + \alpha_2 x_{t-1} + \mu_t \ldots 4$$

Where it is assumed that $\mu_t \sim$ idd $(0, \upsilon 2)$ and $|\beta_1|<1$. The equation 4 coefficients are interpreted as a long-run equilibrium, in the long-run equilibrium we expect that (1 1) the dependent and independents variable stationery on first difference, for long-run equilibrium $y = y_{t-1}$ and $x_t = x_{t-1\,t}$ we can write the equation 4 is

$$y_t = \beta_0 + \beta_1 y_t + \alpha_{1\,t} x + \alpha_2 x_t \Leftrightarrow \quad (1-\alpha)\, y_t = \beta_0 + (\alpha_1 + \alpha_2)x \ldots\ldots 5$$

Hence, the long-run response to y change in x variables given by

$$k = \alpha_1 + \alpha_1 / (1- \alpha) \ldots 6$$

Now we can build the connection between the ARDL and ECM, subtract y_{t-1} both side of equation (4)

$$Y_t - y_{t-1} = \beta_0 + (\beta_0 - 1)\, y_{t-1} + \alpha_1 (x_t - x_{t-1}) + (\alpha_1 + \alpha_1)\, x_{t-1} + \mu_t \ldots 7$$

Substituting $\alpha_1 + \alpha_1 = k\,(1-\alpha)$ from (6) and putting $\Delta y = \Delta y_t - \Delta y_{t-1}$ and $\Delta x = x_t - x_{t-1}$ into (7), we get

$$\Delta y_t = \beta_0 + (\beta_0 - 1)\,(y_{t-1} - k x_{t-1}) + \alpha_1 \Delta x_{t-1} + \mu_t \ldots 8$$

The equation 6 is represent ECM model by the ARDL model (1 1).

Generalized the ARDL model with two independent variables ɣ

$$Y_t = \beta_0 + \sum^{p}{}_{j=1} \beta_j y_{t-I} + \sum^{q}{}_{j-1} \sum^{m}{}_{i-1} + \mu_t \ldots 9$$

5.4 Variables Definition

1 Wheat = Wheat is one of the world's most ordinarily consumed cereal grains. It arises from a type of grass (Triticum) that is grown in countless diversities worldwide. Bread wheat, or common wheat, is the primary species.

2 Rice Basmati Sup. Qlty = Rice is the seed of the grass species Oryza sativa or less commonly Oryza glaberrima. The most important cereal crop in the developing world and is the staple food of over half the world's population

3 Rice Basmati 385/386 = variety of 2

4 Rice Basmati Broken Av. Qlty = variety of 2

5 Rice Irri-6 (Sindh/Punjab) = variety of 2

6 Vegetable Ghee Tin = Ghee is clarified butter from which the milk solids and protein have been removed

7 Vegetable Ghee (Loose) = variety of 6

8 Pulse Masoor (Whole) = Pulses are a type of leguminous crop that are harvested solely for the dry seed. Pulses do not include crops that are harvested green—these are classified as vegetable crops

9 Pulse Masoor (Washed) = variety of 8

10 Pulse Moong (Washed) = variety of 8

11 Pulse Mash (Washed) = variety of 8

12 Pulse Gram = variety of 8

13 Sugar Refined = Refined sugar emanates from sugar cane or sugar beets, which are processed to extract the sugar. It is typically found as sucrose, which is the combination of glucose and fructose. We use white and brown sugars to sweeten cakes and cookies, coffee, cereal and even fruit

14 Interest rate = Interest rate is the amount charged over and above the principal Amount by the lender from the borrower.

15 Diesel = Diesel is an energy-dense secondary fuel (or energy currency) used to power many heat engines, including cars, trucks, and diesel generators.

16 Dummy = A dummy variable is a numerical variable used in regression analysis to represent subgroups of the sample in the study.

5.5 Data and Data Sources

We have Monthly data taken from Bauru statistics of Pakistan varies from July-2008 to October-2021. As mentioned in the following table;

Table 5.1: Selected food items

S. No	Item Name	Unit	Symbol
1	Wheat	10 Kg	W
2	Rice Basmati Sup. Qlty.	Kg	RBS
3	Rice Basmati 385/386	Kg	RB
4	Rice Basmati Broken Av. Qlty	Kg	RBB
5	Rice Irri-6 (Sindh/Punjab)	Kg	RPS
6	Vegetable Ghee Tin	2.5 Kg	VGT
7	Vegetable Ghee (Loose)	Kg	VGL
8	Pulse Masoor (Whole)	Kg	PMW
9	Pulse Masoor (Washed)	Kg	PMWW
10	Pulse Moong (Washed)	Kg	PMWA
11	Pulse Mash (Washed)	Kg	PMA
12	Pulse Gram	Kg	PGRAM
13	Sugar Refined	Kg	SREFIN

Diesel price monthly data received from index Mundi while for interest rate data received from Bauru statistics of Pakistan. Varies from July-2008 to October-2021.

Table 5.2: Dummy variable and other variables

S. No	Variable name	Unit	Symbol
1	Diesel Price	PKR	D
2	Interest Rate	PKR	I
3	Pakistan People Party (Dummy)	…	PPP
4	Pakistan Muslim League Nawaz (Dummy)	…	PMLN
5	Pakistan Tehreek-e-Insaf (Dummy)	…	PTI
6	Average absolute prices	PKR	AVR

5.6 Graphs:

There are two portions of graphical analysis, number one absolute price of selected food items for each regime, second comparison of three political regimes through real price, a formula for real price, nominal price divided by price index (general CPI) multiplied by a hundred. The real price adjusted for inflation shows which regime price of selected food items is high or in which regime is low. End we have taken a graph of the average price of selected food items for absolute and real prices that show whether rising of price selected food items specific to regime or flow across the same regimes.

5.7 Dummy Variables

A dummy variable is technically a dichotomous, quantitative variable; their range is very small between one and zero. Suppose we are interesting to compare the price of selected food items between the three political regimes, for the purpose of whether the rising of selected food items price specific to the regime or movement across the same regimes. A categorical variable that might assume three values PPP, PML-N, and PTI. For comparison, we could make three groups, first comparison of PPP and PML-N based on the reference group (PTI regime). The second comparison

of PPP and PTI based on reference (PML-N regime). Third comparison of PML-N and PTI based on reference group (PPP regime).

5.8 Estimation Techniques

The second procedure is a regression of the price selected food items for the comparison of three political regimes. For that purpose, we have used dummy variables; dummy1 variables assigned to the PPP regime, dummy2 to the PML-N regime, and dummy3 to the PTI regime. Moreover, for the dependent variable, we have the average price of the selected food items while for the independents' variables diesel price per gallon and interest rate, that to find out the effect on the average price of selected food items in short and long run.

Model is for short run:

$$AVR_t = \beta_0 + \sum^{p}_{j-1} AVR_{t-I} + \sum^{q}_{r-1} \gamma_r R + \sum^{m}_{i-1} \varkappa_i D + \mu_t \ldots 8$$

Model for long run:

$$AVR_t = \beta_0 + \sum^{p}_{j-1} AVR_{t-I} + \sum^{q}_{r-1} \gamma_r R + \sum^{m}_{i-1} \varkappa_i D + \mu_t + ECM_{t-I} \ldots 9$$

The ARDL bound test used for long-run relationships whether the variables exist in long-run relationships or not, for the ARDL Bounds testing approach proposed by Pesaran (1997), Pesaran, Smith, and Shin (2001). The value of the f statistic or t value compared with the critical value as we consider five percent in the study. If the f statistic is greater than the upper bound of the critical value it shows the long-run relationship exists, if less than the bound it could be no relation in the long run if the value lies between the lower and upper bound we should say that relationship is inconclusive.

$$PPP = 1\ if\ PPP\ regime; PPP = 0, otherwise \ldots 5.1$$

$$PMLN = 1, if PMLN\ regiem; PMLN = 0, otherwise \ldots 5.2$$

Equation (5.1) and (5.2) we cannot create a dummy for the PTI regime because if dummy 1 and dummy 2 is equal to zero, we know that must be a rising price of selected food items only in the PTI regime.

Group Second:

$$PPP = 1\ if\ PPP\ regime; PPP = 0, otherwise \ldots 5.3$$

$$PTI = 1\ if\ PTI\ regime; PTI = 0, otherwise \ldots 5.4$$

Equation (5.3) and (5.4) we cannot create a dummy for the PML-N regime because if dummy 1 and dummy 3 is equal to zero, we know that must be a rising price of selected food items only in the PML-N regime.

Group Third"

$$PMLN = 1\ if\ PMLN\ regime; PMLN = 0, otherwise \ldots 5.5$$

$$PTI = 1\ if\ PTI\ regime; PTI = 0, otherwise \ldots 5.6$$

Equation (5.5) and (5.6) we cannot create a dummy for the PPP regime because if dummy 2 and dummy 3 is equal to zero, we know that must be a rising price of selected food items only in the PML-N regime. The following three functions are given below

$$AVR = f(D, R, PPP, PMLN),,,5.7$$

$$AVR = f(D, R, PPP, PTI),,,5.8$$

$$AVR = f(D, R, PMLN, PTI),,,5.9$$

The average price of selected food items is the function of diesel price, interest rate, PPP, PML-N, and PTI regimes all other things remain constant.

Models are for the short-run with dummy variables applied by Saeed *et al*. (2012)

$$AVR_t = \beta_0 + \sum^{p}_{j-1} AVR_{t-I} + \sum^{q}_{r-1} \gamma_r R + \sum^{m}_{i-1} \gamma_i D + PPP + PMLN + \mu_t \ldots 5.10$$

$$AVR_t = \beta_0 + \sum^{p}_{j-1} AVR_{t-I} + \sum^{q}_{r-1} \gamma_r R + \sum^{m}_{i-1} \gamma_i D + PPP + PTI + \mu_t \ldots 5.11$$

$$AVR_t = \beta_0 + \sum^{p}_{j-1} AVR_{t-I} + \sum^{q}_{r-1} \gamma_r R + \sum^{m}_{i-1} \gamma_i D + PMLN + PTI + \mu_t \ldots 5.12$$

In the end, we test our data for the multicollinearity run variance inflation factor (VIF), if VIF more than 10 value it shows us there is multi- collinearity, if less than 10 value it mean that the model have no multi- collinearity. Cusum test use for the estimation of regression stable over the sample period, if the regression line lies between the two lines then we can say that model is stable. For heteroscedasticity Test used Breusch-Pagan-Godfrey, if the probability of chi-square is more than five percent it means that there is no Heteroscedasticity.

Chapter 6

Results and Discussions

6.1 Graphical Analysis

Compares the selected price of food items in three political regimes, it has chosen the price of 13 food items on a monthly basis varies from Jul-2008 to oct-2021. Data has taken from the bureau statistic of Pakistan.

We compare both the absolute and real prices of selected food items graphically for three political regimes. Absolut price of selected food items for three regimes with time trend; whether the price increase with time or not. The real price of selected food items adjusted for inflation; it indicates us real change in price, in which regime prices high compared with the base month. We are kept base month July 2008.

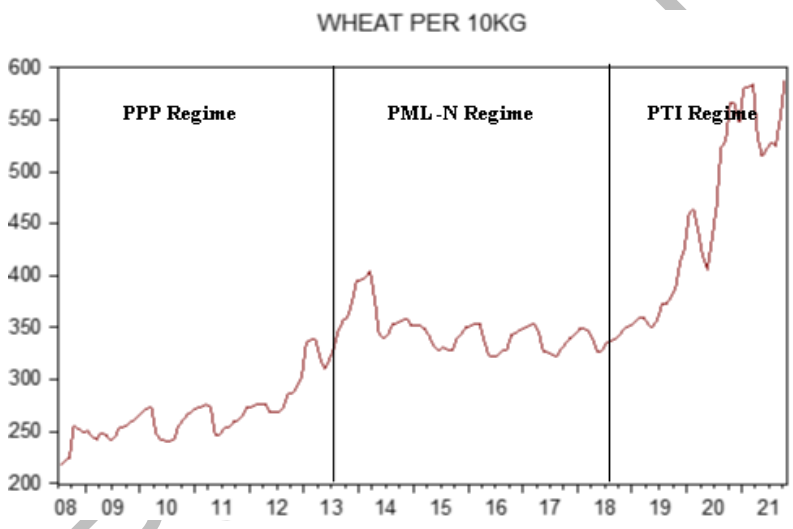

Figure 6.1: Comparison of PPP, PML-N, and PTI regimes by absolute price of wheat per 10kg

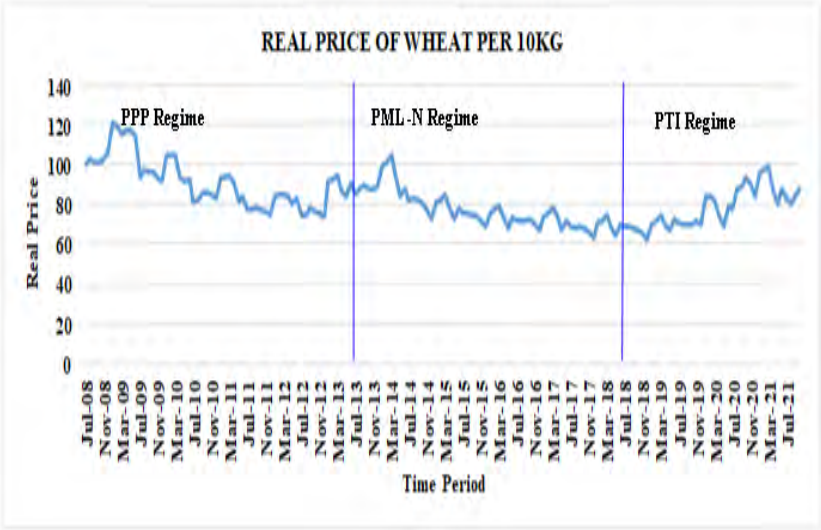

Figure 6.2: Comparison of PPP, PML-N, and PTI regimes by real price wheat per 10kg

Figure (6.1) shows wheat absolute price per 10kg for PPP, PML-N, and PTI. left side PPP regime, middle side PML-N regime, and right side PTI regime. The Verticle line represents a nominal price per 10 kg for wheat (W) and the horizontal shows the time period. PPP tenure starts from July- 2008 to jun-2013. In oct-08 10kg wheat price 256RS, again price slightly downfall to 249RS per 10kg wheat in Dec 2008, the lowest price of per 10kg was 240RS in jun-2009.

The slope rises upward in July 2009, the price of wheat 273RS per 10kg. After mar-2010, wheat price per 10kg little fall and again raise. In dec-2013, in this PPP regime, wheat price per10kg sometimes-upward trend and sometimes-downward trend but is whole wheat per 10kg prices increased. Wheat Upward trend is more than a downward trend, upward trend continuous in PML-N regime. Slope steeper from May-2013 to March 2014, during this time price per 10kg wheat continuously rising, what highest price was 403RS per kg in March 2014. From April 2014 to Jun 2014 steeper downward sloping. After this curve movement with random drift to Jun 2018. The right side of the PTI regime represented a steeper upward slope, the high price of wheat per 10kg 584RS in March 2021. The price of wheat per 10kg is very high in the PTI regime compared to the other two regimes.

In figure (6.2), the vertical line shows the real price per 10kg wheat while the horizontal shows the period on a monthly basis. The real price of wheat in the PPP

regime seems very high from November 2008 to March 2009 in the table (6.2). In the beginning, the PPP regime wheat price is high due to the global financial crisis and poor policies of the government. Along with the shortage of wheat caused due to the smuggling to Afghanistan.

After November 2009 trend moved downward and upward with a negative slope, this trend going on up to December 2012. After this real price of 10 kg rises in inter into the PML-N regime. The PML-N regime top a high real price in March 2014. The real price of wheat continuously falls in the PML-N regime the reason is that, the price of wheat of reflected by the international oil price. In the PML-N regime, relatively oil price was low because the international price of oil was low, this low trend of real price inters into the PTI regime but unfortunately, the current government cannot control the price of wheat. There are many reasons, one reason is the covid-19 pandemic, second reason government unexperienced polices because this is the first time of this current regime to run the government, the third reason. Internationally oil price rise is the result of its negative effect on the price of wheat.

The highest real price of wheat in this regime is in November 2020, after that the curve shows a downward movement after a while moves upward movement. So we can conclude from the above discussion, the nominal price rise of wheat per 10kg with the passage of time, shown in figure (6.1). The nominal price rise of wheat per 10kg starts from the PPP regime until now. The real price of wheat per 10kg does not increase with the time trend, shown in figure (6.2); real price increase in the PPP regime and then PTI regime.

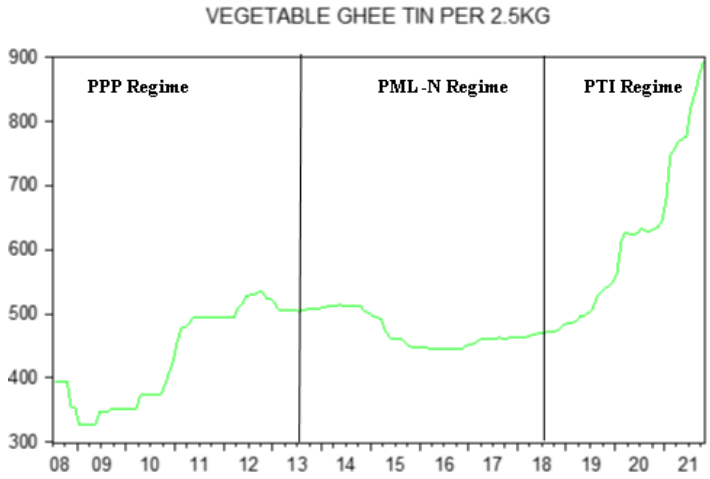

Figure 6.3: Comparison of PPP, PML-N, and PTI regimes by absolute price of vegetable ghee tin per 2.5kg

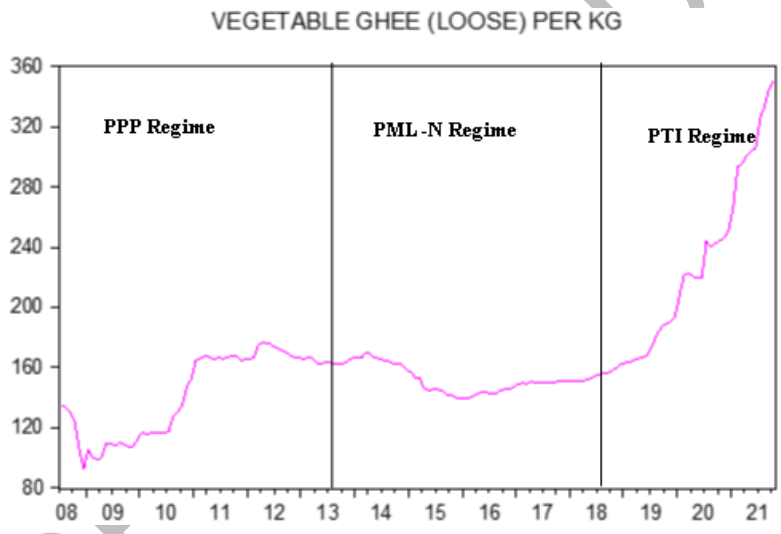

Figure 6.4: Comparison of PPP, PML-N, and PTI regimes by absolute price of vegetable ghee Loos per kg

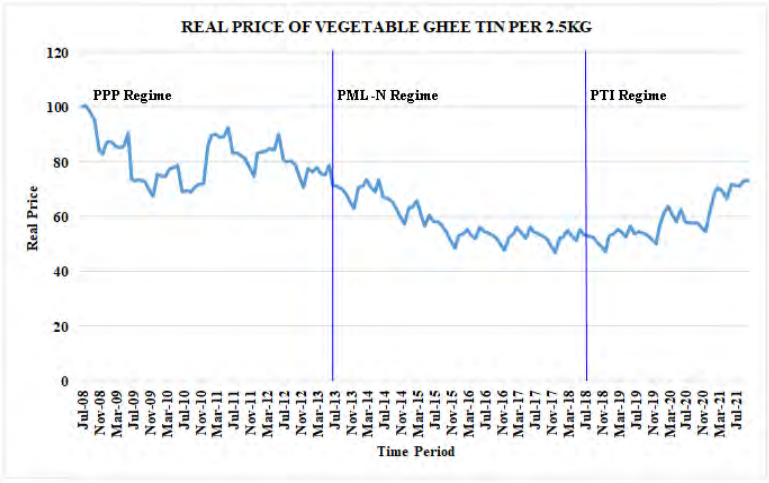

Figure 6.5: Comparison of PPP, PML-N, and PTI regimes by real price vegetable ghee tin per 2.5kg

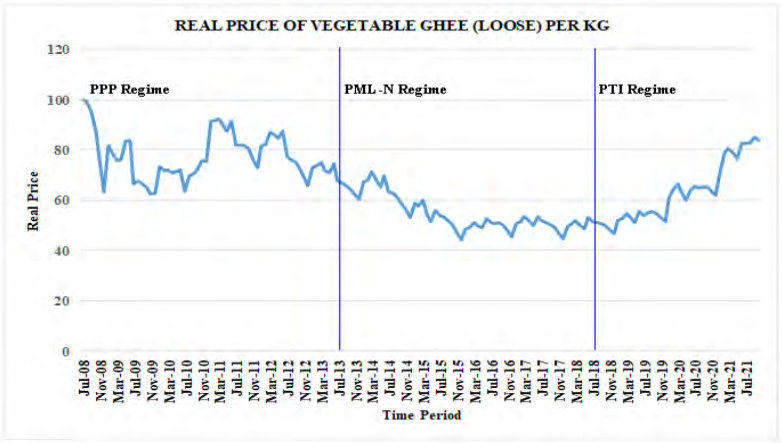

Figure 6.6: Comparison of PPP, PML-N, and PTI regimes by real price vegetable ghee loos per kg

Figure (6.3) represents the price per 2.5kg of Vegetable Ghee Tin (VGT). The right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in the figure (6.3). In PPP time the VGT, price per 2.5kg 395RS in July 2008. After this, the price of VGT go down the lowest price of VGT in Jan, Feb, Mar 2009 was 327RS per 2.5kg. After this show, again upward trend, price rises to VGT Sep, Oct 2012 per 2.5kg was 534RS. A flatter movement of a line from 2011 to 2012, after slightly shows negative slope. That movement of the curve shifted into the PML-N regime. It shows like the U shape curve, the highest price of VGT in Jan-2014.

The price of VGT per 2.5kg was 511RS. From that, point the price continuously cut down, until the point where the price per 2.5kg 444RS in sept-oct- 2016. Then again, show an upward trend in the PTI regime, dec-2018 price per 2.5kg was 482RS. Slop steeper rise, the highest price is record 892RS per 2.5kg in PTI regime.

Figure (6.4) indicates vegetable ghee loose (VGL). The right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in figure (6.2). Curve show in the PPP regime a random drift movement with a positive slope, after that movement of a steeper slope. The price per kg VGL in nov-08 135RS, the lowest price of VGL see in the month of dec-08. The highest price of VGL in sep-012 170RS per kg. Smoothly downward change occurred in the price per kg VGL, this downward change shifted to the PML-N regime. Dec-2013 the price of VGL 166RS per kg. Curve movement continuously falls, the price of VGL per kg in Jan- 2014 166RS. After a while price was going to dawn the lowest in dec-2015 and Jan-Feb-2016 was 139RS per kg.

VGL curve again shows an upward trend, this trend inters to PTI regime, in dec-2018 the price per kg was 162RS. Particularly in the PTI regime price of VGL increased with a big margin, the curve shows a steeper slope, which indicates a high change in the price of VGL per kg. per kg price of VGL had recorded 350RS in oct-2021.

Figure (6.5) represents the real price of vegetable ghee tin per 2.5kg. The vertical line shows the real price and the horizontal line indicates the monthly period. Figure (6.5) divided into three portions, the left portion for the PPP regime, and middle for the PML-N regime, and the right for the PTI regime. The top price in the PPP regime was 100.53 per 2.5kg. Then the real price fell to 80 in March 2009, the minimum real price in the PPP regime was 70 in March 2009. After this real price moves upward and then downward, it is continuously interring into the PML-N regime. In the PML-N regime, the real price of vegetable ghee tin per 2.5 kg is downward but it again rises in the PTI regime.

Graph (6.6) for vegetable ghee loos per kg. It is the same graph as graph (6.5), a minor change observed between the two graphs, particularly in the PPP regime. Therefore, we can summarize the above discussion of graphs (6.3), (6.4), (6.5), and (6.6). The nominal price of vegetable ghee tin per 2.5kg and vegetable ghee loos per kg

show an increasing time trend starting from the PPP regime up to now. The real price of vegetable ghee tin and vegetable ghee loos is more in the PPP regime, in the minimum real price of vegetable ghee tin and vegetable ghee loos in the PML-N regime while in the PTI regime increases up to now.

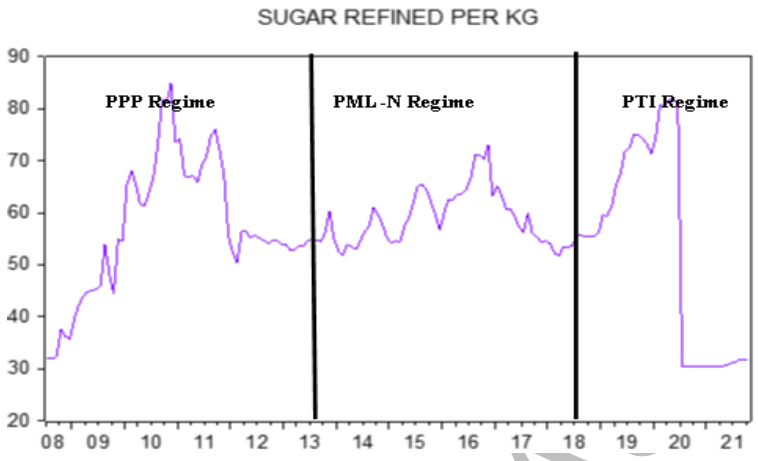

Figure 6.7: Comparison of PPP, PML-N, and PTI regimes by absolute price of sugar refined per kg

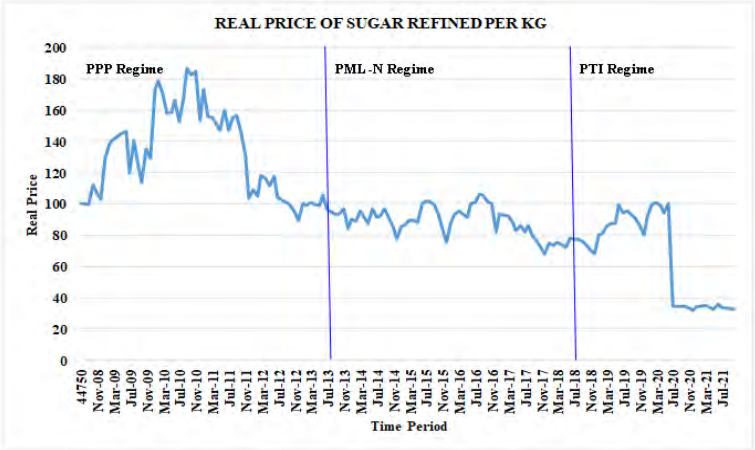

Figure 6.8: Comparison of PPP, PML-N, and PTI regimes by real price of sugar refined per kg

Figure (6.7) nominal price of sugar refined for three regimes. The right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime. Sugar refined in Jul-2008 the price per kg sugar 31RS, 48RS in sep-09 again down to 44 in oct-09. At the beginning Of the PPP regime, the movement of the curve was a near-vertical slope. An upward trend to the nov-2009,

price of sugar refined per kg 84RS, the price of sugar decreases again to 73 per kg in dec-2010. Line of sugar in some period up to and some period down in PPP regime. At the end of the PPP regime curve downward trend, this trend is interring to the PML-N regime. In dec-2013, the price of sugar per kg was 54RS.

The highest price of sugar refined was 73rs in nov-2016. In the PML-N regime a little change occurred in the price of sugar per kg, this negative slope change shifted into PTI government, after some period trend moves up. Such in the graph (6.7), the price of sugar per kg was 59RS for two months Jan- Feb-2019. The price of sugar refined shows an upward trend, the highest price of 81RS per kg for the three consecutive months such as April-May-Jun 2020. After this, a huge fall in the price of sugar refined to 30RS per kg. In May-Jun-July august Sept and October -2021 31RS per kg.

Figure (6.8) represents the real price of sugar refined per kg. It is the same as figure (6.7) but change sees between the two graphs. The real price of sugar, in the beginning, was low while in July 2009 price jumped and the high real price of the PPP regime in November 2010, after the price falls and inter into the PML-N regime. In the PML-N regime price some time high and sometimes low but in the end real price of sugar-refined falls, this trend inters into the PTI regime, at the start real price of refined sugar rise in the PTI period but it sees a big jump in the real price of sugar refined May 2020. We can conclude from the above discussion real price of sugar refined per kg was more in the PPP regime compared to the two regimes. The lowest price of sugar refined per kg is the PTI regime.

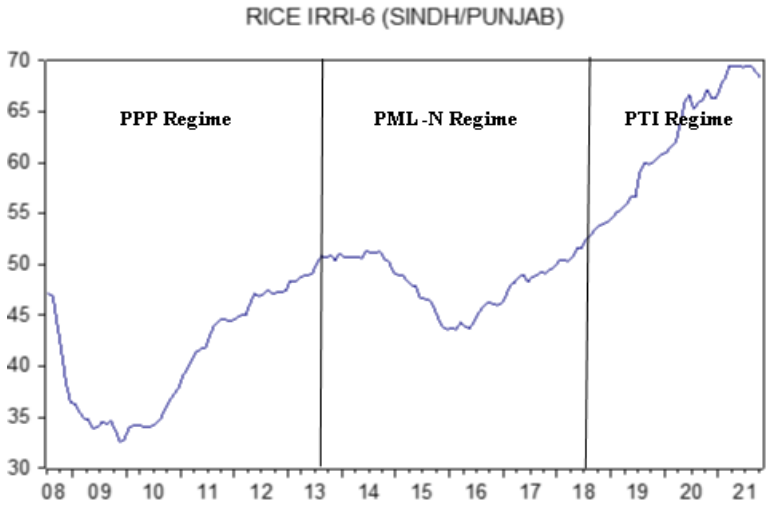

Figure 6.9: Comparison of PPP, PML-N, and PTI regimes by absolute price of Rice Irri-6 (Sindh/Punjab) per kg

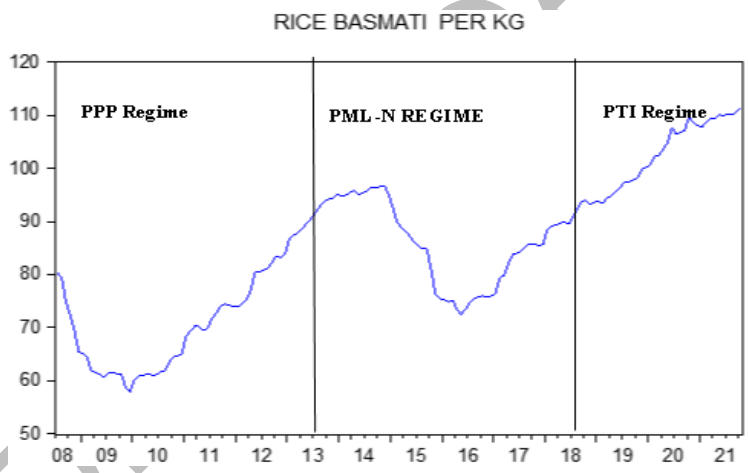

Figure 6.10: Comparison of PPP, PML-N, and PTI regimes by absolute price of per kg Rice Basmati 385/386

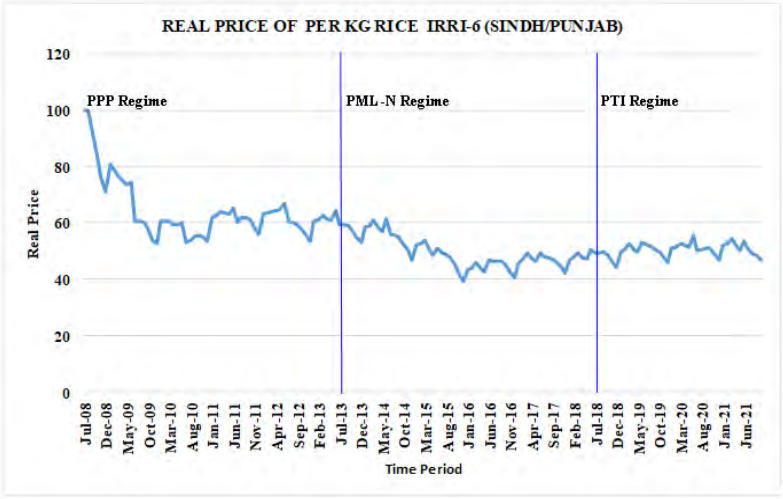

Figure 6.11: Comparison of PPP, PML-N, and PTI regimes by real price of rice Irri-6 (Sindh/Punjab) per kg

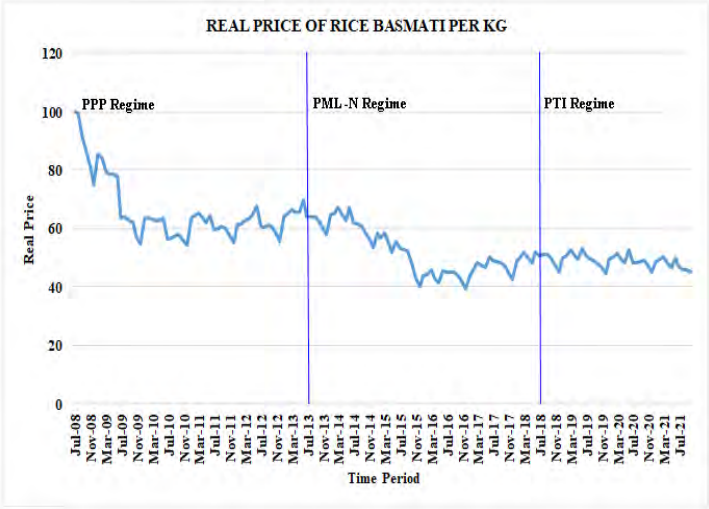

Figure 6.12: Comparison of PPP, PML-N, and PTI regimes by real price of Per kg Rice Basmati 385/386

Figure (6.9) represents rice Sindh/Punjab for three regimes. The right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in the figure (6.9). In the PPP regime, the price rise in sep-2008 and again fall down to 33RS per kg in may-09. In some periods' falls and some periods' ups, this up, and downs trend shifted to the PML-N regime. the price of RPS from august-2012to jun-2014 was 44RS, the highest price of RPS in dec-2013 51 per kg. The curve of RPS show in some month constant movement PTI tenure, the high price in the last two months was 54RS per kg in November and December- 2018. The

price of RPS same consecutive months such as Feb-march-April in 2019. This period is going on just like price stop on 59RS for three coming months so on, the price of RPS in oct-2021 was 68RS.

Figure (6.10) indicates the price of rice basmati (RB) for three regimes. The right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in the figure (6.10). The price of RB per kg is 80RS per kg in PPP Regime, and then continuously goes down the price of RB. Until the dec-09, the price per kg was 57RS, then again increase the price continuously the price of RB per kg 137RS in the month of dec-013. This upward trend converts into the PML-N regime. In the PML-N regime the price of RB per kg 94RS in the month of Jan-2014. The RB line shows gradually upward movement from left to the right. Little change occurred in the price after some period the price of RB would fall, the lowest price per kg was 72RS in the month of May- 2016. Then again show an upward trend inter into the PTI regime, the high price in the month of dec-2018 93 per kg. The curve for RB gradually ups and after some period, again falls and then again raise this situation is going on the price of RB in oct-2021 was 111RS per kg.

Figure 6.11 represents the real price of rice Irri-6 (Sindh/Punjab) per kg. The vertical line represents the real price and the horizontal line indicates the period. The high price seems in the PPP regime after the price falling in this kind of movement inter into the PML-N regime. The most minimum price has in PML-N regime, this minimum price inters into the PTI tenure but last couple of month the real price of rice has high. At the same situation in the figure (6.12), a little change seems but it is ignorable.

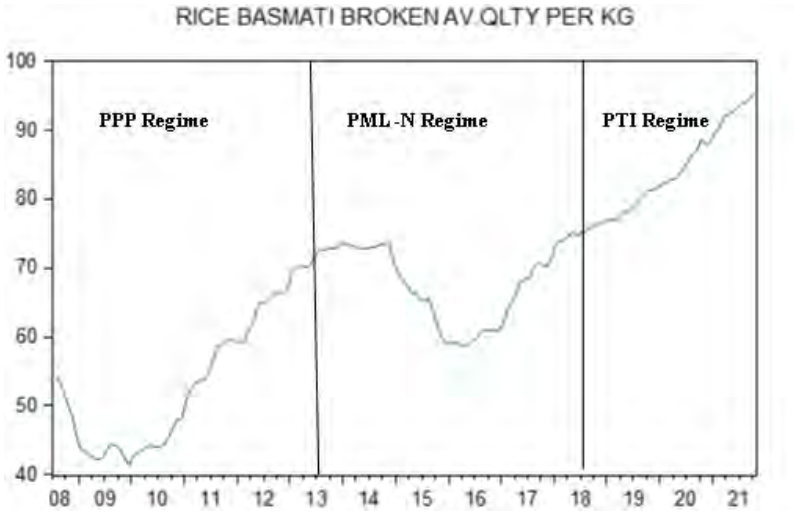

Figure 6.13: Comparison of PPP, PML-N, and PTI regimes by absolute price Rice Basmati Broken Av. Qlty per kg

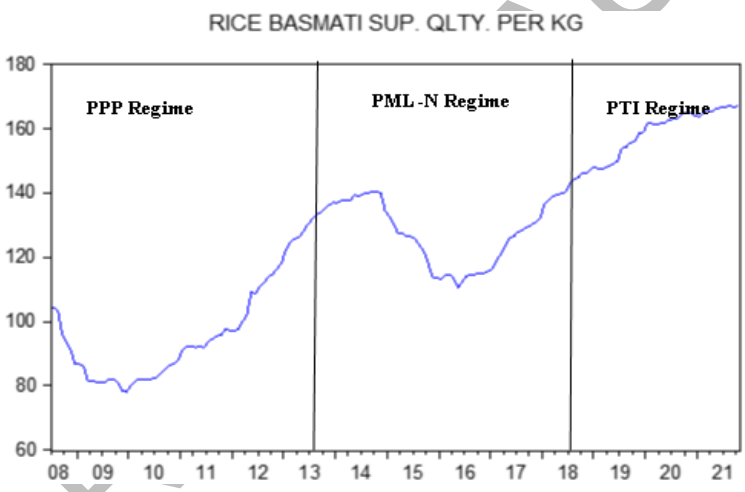

Figure 6.14: Comparison of PPP, PML-N, and PTI regimes by absolute price of Rice Basmati Sup. Qlty.

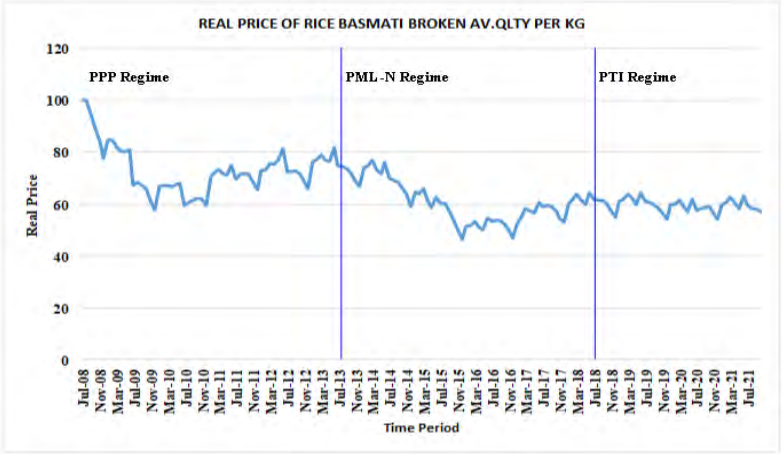

Figure 6.15: Comparison of PPP, PML-N, and PTI regimes by real price of rice Basmati Broken Av. Qlty per kg

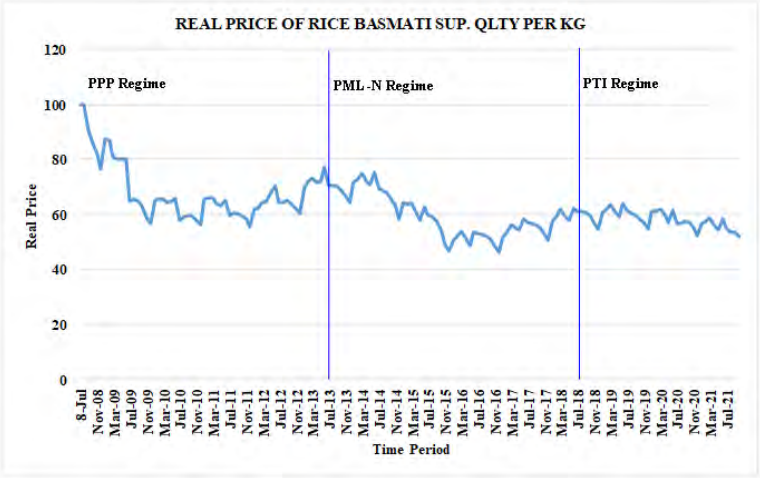

Figure 6.16: Comparison of PPP, PML-N, and PTI regimes by real price of rice Basmati Sup. Qlty.

Figure (6.13) represents the price per kg rice basmati broken (RBB) for three regimes. The right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in the figure (6.13). In the PPP regime, the price of RBB per kg was 54RS in august-2008. Coming further price of per kg increases and again decreases and sees a fluctuation in the price of RBB per kg 73RS in dec-013. This trend inters the PML-N regime. The line for RBB shows parallel movement from left to the right, at the beginning the price of RBB per kg was 73RS per kg. The trend sometimes shows downward movement some time upward movement but the change occurred little in the price of RBB. The highest price of RBB was in the months of October, November, and December in 2018 76RS per kg in the PTI regime.

The price of RBB remained constant for some months and the price per kg was 93RS in oct-2021.

Figure (6.14) is the price per kg of rice basmati super quality for three regimes. The right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in the figure (6.14). the price of RBS per kg 104RS in Jul-08, after this month the price decreasing trend till to the dec-09 that time price of RBS per kg was 78RS. After this downward trend show again upward trend in some month the price of RBS goes down little.

However, this trend inters into the PML-N, the upward trend price of RBS per kg in dec-13 was 137RS. The RBS curve price of RBS per kg was 136RS per kg, the price gradually rises. The price remains constant for the months of September, October, November, and December in 2014. After this show negative trend, the price would fall to 110RS per kg in may-2016. This kind of trend shifted to PTI tenure, RBS's highest price per kg 137RS in dec-2018. Price of RBS 147RS per kg in Jan- 2019. The curve of RBS gradually movement upward in Oct- 2021 the price of RBS 167RS. Figure (6.15) and (6.16) for the real price of rice Basmati Broken Av. Qlty per kg and real price of rice Basmati Sup. Qlty. both curves of the two graphs are the same movement, the real price of rice both varieties seem more in PPP regime. Real prices were low in the PML-N regime. Again, rise in PTI regime.

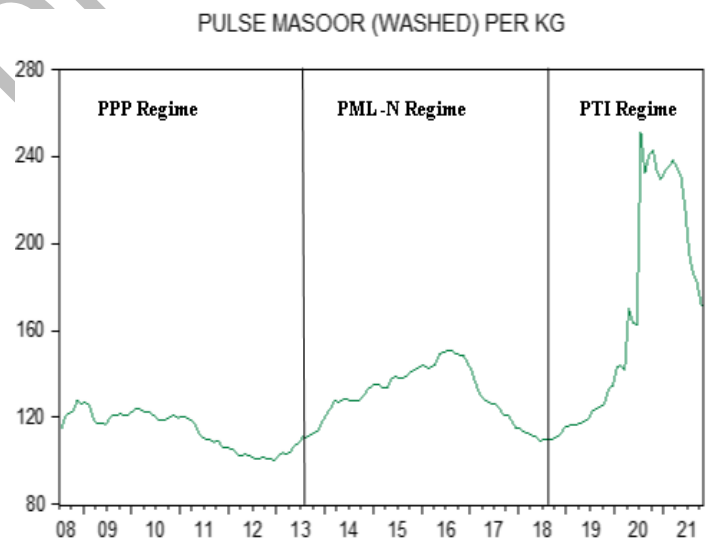

Figure 6.17: Comparison of PPP, PML-N, and PTI regimes by absolute price of pulse masoor washed per kg

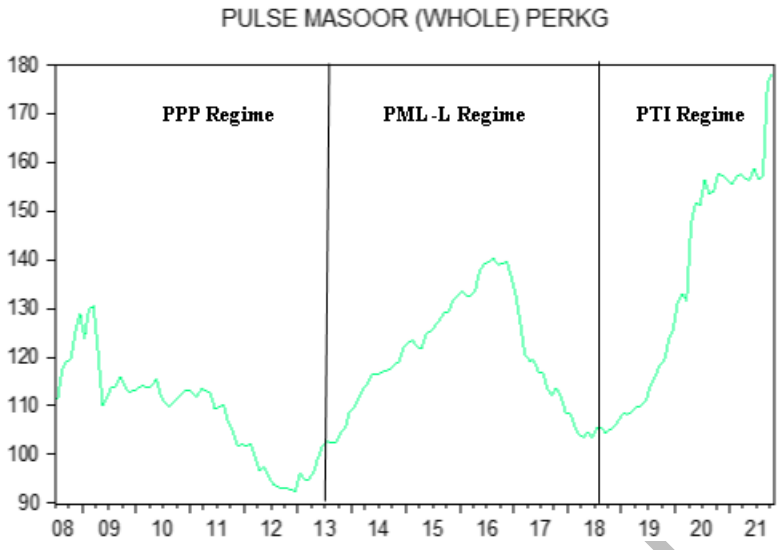

Figure 6.18: Comparison of PPP, PML-N, and PTI regimes by absolute price of pulse masoor whole per kg

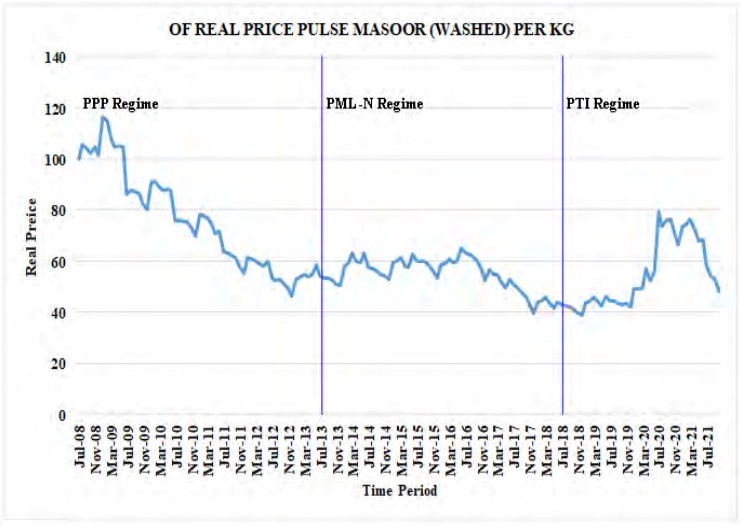

Figure 6.19: Comparison of PPP, PML-N, and PTI regimes by real price of pulse masoor washed per kg

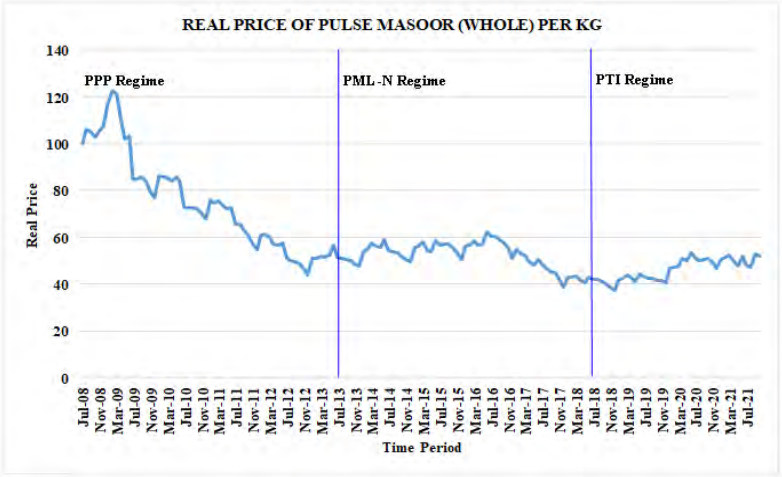

Figure 6.20: Comparison of PPP, PML-N, and PTI regimes by real price of pulse masoor whole per kg

Figure (6.17) represents the price of Pulse Masoor Washed (PMWW) for three regimes. The right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in the figure (6.17). In the PPP regime the prices of PMWW 114RS per kg. The lowest prices per kg were PMWW 100RS in the month of Nov-09. The highest price per kg was PMWW 120RS in nov-08. The portion of PPP regime, curve movement from left to right with slightly horizontal, but this curve bend upward slope and shifted to PML-N regime The price PMWW 121RS per kg in Jan-2014. Figure (6.18) the price of pulse masoor whole (PMW) for three regimes.

The right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in figure (6.18). In the PPP regime price of PMW at the beginning high, then fall vertical, after this movement starts with random drift from left two right. At the minimum price in PPP regime 92RS in November 2013. After November month in 2013 showed an upward trend, this trend shifted to the PML-N regime.

The relationship of PMW and its period with flatter positive slope in PML-N government, price reach to the top. Its high price in PML-N regime 140RS per kg in July 2016. After the peak curve falls with a steeper slope and reaches a minimum, this low-price trend inters into the PTI government. A big change occurred in the price of PMW in PTI tenure, the association between the price and period positively with the steeper slope. In 2021 shown in figure (6.18) when the price stops at the peak after that

starts a random, drift movement, Then again, the price is high in 2021. Figure (6.19) has the representation of the real price of pulse masoor washed per kg. The vertical line represents real price and horizontal line represents time. Real price seems high in PPP regime. Next, this curve shows negative movement to right side.in PML-N regime curve shows a little jump, in the PTI regime real price move upslope, seem steeper, real price stay probably same for some period after a while price come down gradually. In the same situation for figure (6.20), a minor change observed should be negligible but a more real price change seems in PTI regime.

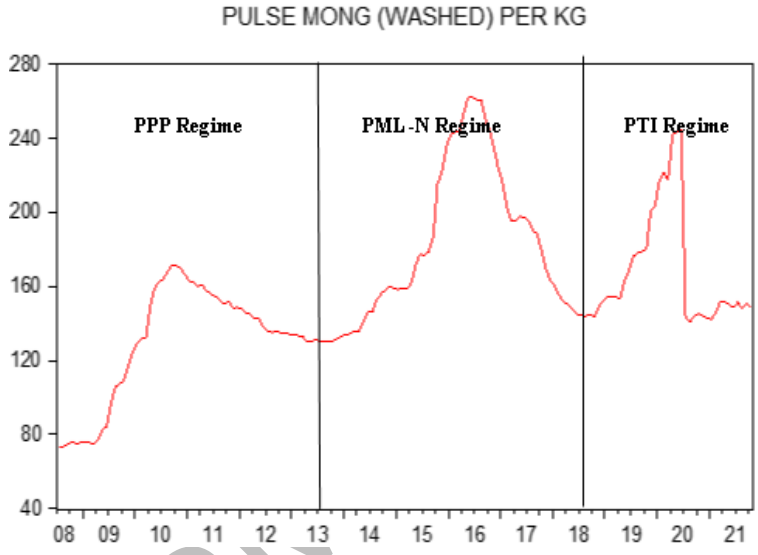

Figure 6.21: Comparison of PPP, PML-N, and PTI regimes by absolute price of pulse mong washed per kg

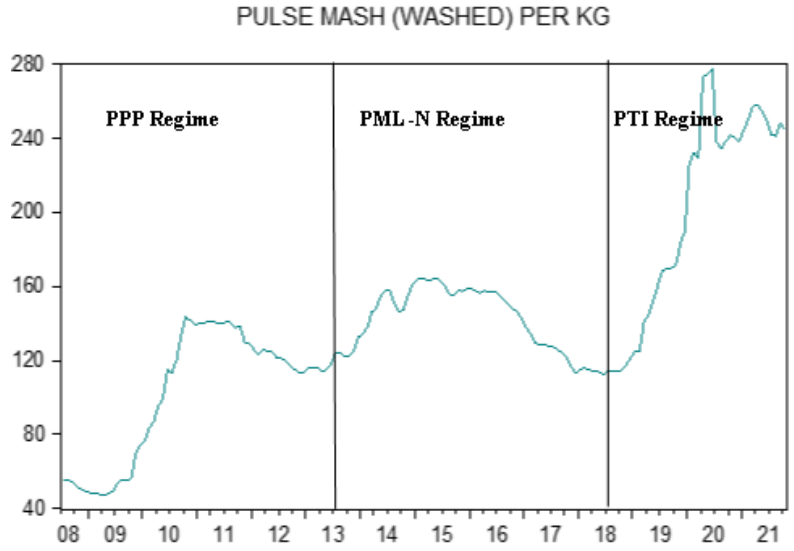

Figure 6.22: Comparison of PPP, PML-N, and PTI regimes by absolute price of pulse masoor washed per kg

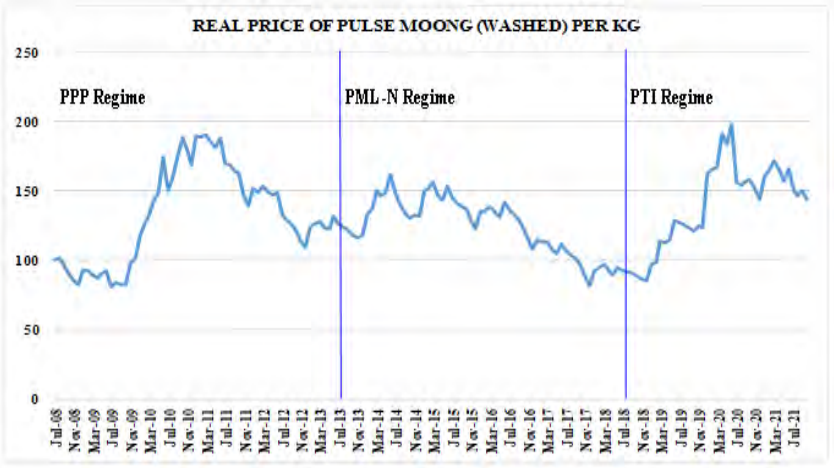

Figure 6.23: Comparison of PPP, PML-N, and PTI regimes by real price of pulse masoor washed per kg

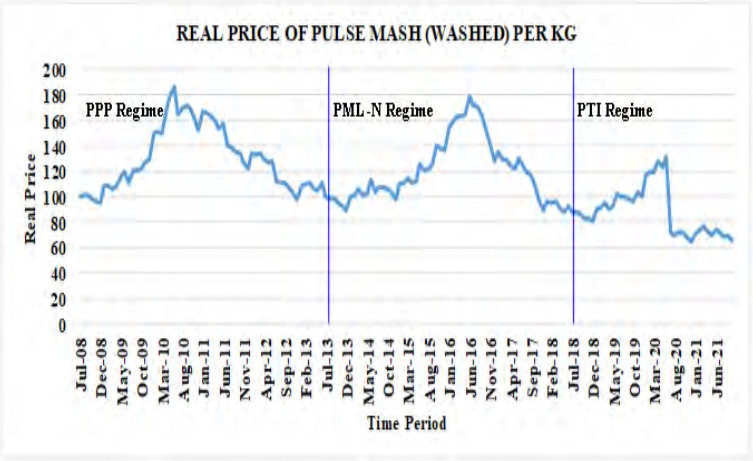

Figure 6.24: Comparison of PPP, PML-N, and PTI regimes by real price of pulse masoor washed per kg

Figure (6.21) the price of pulse moong washed for three regimes. The right-side indications the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in figure (6.21). In the PPP regime the price per kg of PMWA 55RS, the lowest prices per kg PMWA per kg 46RS in the month of apr-09. Slope in PPP regime steeper, the highest price per kg of PMWA 142RS in October 2010. Then gradually move downward and shifted to the PML-N regime.

In PML-N government shows upward trend PMWA, it had the highest price 158RS Jul-2014. Then again show a negative trend and shifted PTI regime, the price of PMWA in the months of Jan-Feb- 2019 142RS. After this, the price of commodities gradually increases up to 229RS in March 2020. After this suddenly jumps to 273RS in the month of April 2020. Then fall to the month of Oct- 2021, overall the price of PMWA high compared to PPP and PML-N.

Figure (6.22) pulse mash washed (PMA) for three regimes, the right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in figure (6.22). In the PPP regime, the lowest price was PMA per kg 72RS in Jul-08 while the highest price per kg was 160RS in November 2010. Then smoothly price down, this negative slope trend inters into the PML-N regime At the beginning of PML-N tenure price low prices of PMA, then slowly moved upward but the curve of PMA jumped suddenly in the months of May, Jun, and July price 162RS per kg. Again, fall steeply, this low price of PMA inter into the PTI

government. The price of PMA same three consecutive months of Jan-Feb- march 2019 154RS per kg.

The price speedily goes up 221RS in Feb-2020; see the fluctuation in the prices of PMA the last month of Oct- 2021 the price of 148RS per kg. Figure (6.23) represents the real price of pulse masoor washed per kg. In beginning PPP, regime real price was low, after some while price shows an upward trend, again the price starts a downward movement and this falling price inter into the PML-N regime, in this regime real price rise steeply, after this shows a falling price. PTI regime real price goes to very high again down but not more as PPP and PML-N Figure (6.24) real price of mash washed per kg for three regimes, real price rise in both regimes i.e. PPP and PML-N regimes. Real price low in PTI regime.

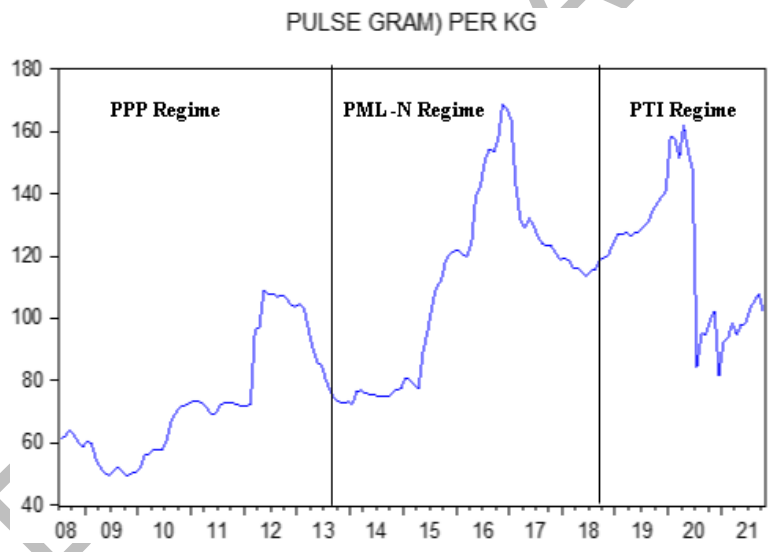

Figure 6.25: Comparison of PPP, PML-N, and PTI Regimes by Absolute Price of Pulse Gram Per Kg

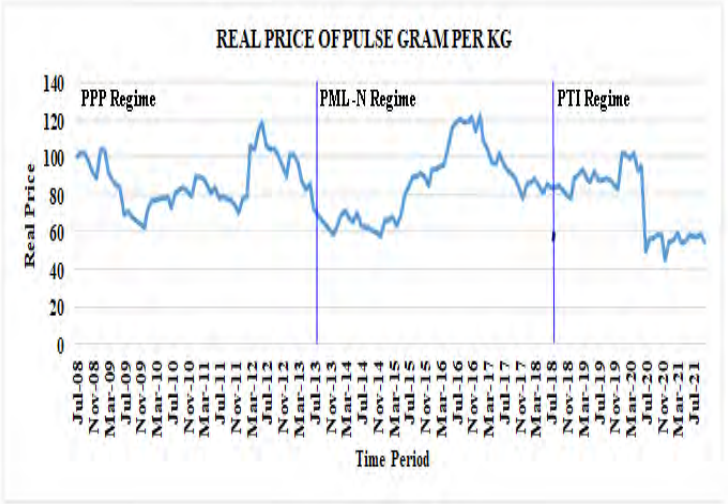

Figure 6.22: Comparison of PPP, PML-N, and PTI regimes by real price of pulse gram per kg

Figure (6.25) the price of pulse gram (PGRAM). The right side shows the PPP regime, the left side is the indication of the PTI regime; the middle portion represents the PPP regime in figure (6.25).in PPP regime shows a downward trend of price "between" period 2009 to 2012, before the prices PGRAM 61RS per kg. Lowest prices per kg PGRAM 49RS in the month of oct-09 while again shows upward movement, the highest price per kg was PGRAM 108RS per kg in May- July-2012. After some period of time negative slope, price falls. This falls trend shifts to PML-N regime. The lowest price was 72 per kg in November 2013, for some periods price stayed horizontal. suddenly the price of PGRAM goes to increase, the peak price per kg was 168RS in nov-2016 and then again price fell in the month of dec-2018 the price per kg of PGRAM 124RS. Then a downward movement started that inter into the PTI regime.

But in PTI tenure price rise again, the price of PGRAM was 162RS per kg so a one-unit increase but a big jump was seen from 140RS to 158RS, in dec-2019 to Jan-2020 then show again falling trend after some months' trend increase, in October 2021 the price of PGRAM was 102RS.

Figure (6.22) indicates the real price of pulse gram per kg. The real price of pulse gram in PPP regime is beginning high but with the passage of time real price of pulse gram per kg seems shocks in March 2012 price went to the peak. After this again price falls, downward trend inters into the PML-N regime, the price of the real price of pulse per gram has quite high but the end of PML-N regime come down, after this a parallel move to the PTI regime. In the last, couple of years the real price of pulse gram

per kg fall. We can conclude from the above discussion, most of the selected food items real price high in PPP regime second PTI and third PML-N regime.

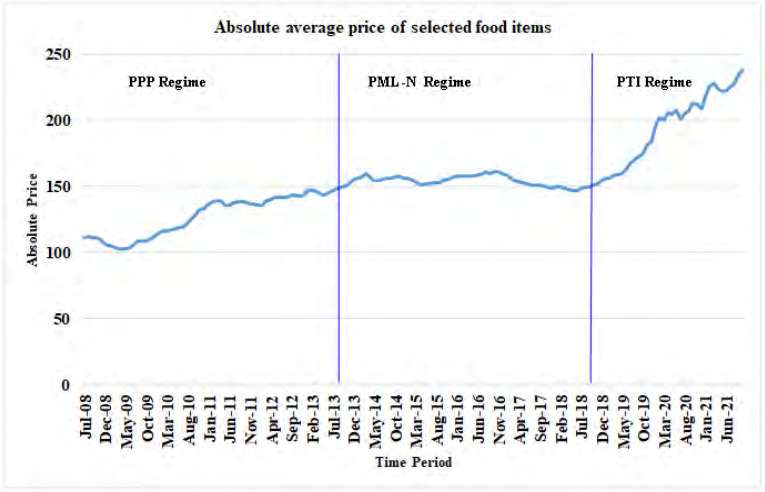

Figure 6.27: Comparison of PPP, PML-N, and PTI regimes by absolute price of average selected food items

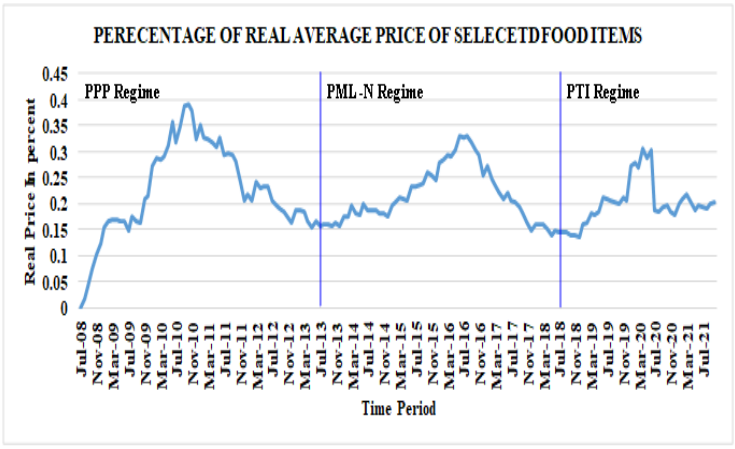

Figure 6.28: Comparison of PPP, PML-N, and PTI regimes by real price of average selected food items

Figure (6.27) has the indication of the absolute average price of selected food items for three regimes. The absolute price of selected food items was quite low in the PPP regime but the per capita income of people was also low. The real average price of selected food items in the PPP regime jump to a peak in figure (6.28), the reason has the international financial crisis second natural disaster and the last political instability in the region.

The absolute price of average selected food items raises in the PML-N regime along with also increase in the per capita income of the people. If we look at the real average price of selected food, items had moved up to the top, because of political instability, terrorism, and bad climatic condition.

The absolute average price has shown more raise in the PTI regime. The real average price of selected food items in the current regime has seemed enough high. There are many reasons, which push the real price of selected food items increased, one reason has the mismanagement of the current government; the covid-19 pandemic, the oil price is increasing which affect domestic food items.

In July 2020 absolute and the real average price of selected food items fell the reason has, in July 2020 season food items become ready to reap, so selected food items are available sufficient amount in the good market, downward pressure on price which has resulted in food items price low in the market.

6.2 Regression Analysis

We have taken the classical linear regression model, regression runs through ARDL method. The dependent variable is absolute average price of selected food items (average), independent variables are interest rate (R), diesel price (D), three dummy variables i.e. PPP Regime, PML-N Regime and PTI Regime. Monthly data taken from Pakistan bureaus statistics, Pakistan Economic Survey and Index Mundi varies from July 2008 to October 2021.

Before the result and discussion, it was necessary to check the variables stationary for that we used the augmented dicky fuller test for unit root Fuller (1979) so the results mentioned in the following table 6.1

Table 6.1: Augmented dicky fuller test for unit root

Variables	**1(1)**	**Probability**
AVR	Stationary	0.000000
R	Stationary	0.000000
D	Stationary	0.000000

In Table 6., first, the column represents the variables, which are the average price of selected food commodities, diesel price, and interest rate, the second column show level, third column has shown the first difference of the variable, the last column has shown a probability of the variables. Decision takes based on probability, the null hypothesis as data has a unit root, so based on results our data stationary at first difference. All variables have stationary at first difference.

Table 6.2: Short-run result of ARDL model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
AVR (-1)	1.270244	0.123632	10.27443	0.0000
AVR (-2)	-0.153689	0.190299	-0.807620	0.4207
AVR (-3)	-0.332616	0.205648	-1.617401	0.1080
AVR (-4)	0.233926*	0.128979	1.813674	0.0719
D	0.010160	0.009013	1.127257	0.2616
D (-1)	0.006936	0.014306	0.484843	0.6285
D (-2)	0.018255*	0.009741	1.874178	0.0500
R	0.335371	0.199938	1.677376	0.0957
R (-1)	-0.320509	0.232678	-1.377481	0.1706
R (-2)	0.030930	0.173263	0.178515	0.8586
R (-3)	0.605328	0.126498	4.785264	0.0000
R (-4)	0.412139*	0.160523	2.567479	0.0113
R-squared	0.996327	---		---
Adjusted R-squared	0.995933	---		---
f-statistic	2531.551	Durbin-Watson stat		1.759810
Prob(F-statistic)	0.000000	---		---

Table 6.2 is showing the result of the short-run of the ARDL model, R square is near 1, which means that model is good. The Durbin Watson stat has 1.7. The optimal lags selection is based on AIC criteria, the Stata 15 adjusted automatically optimal lags in the model are 4, 2, 4, which represent the star top of the variables. For heteroscedastic has been used white test.

Diesel price variable significant at lag 2, the probability in the table is 0.000 percent, while lag 1 of diesel price insignificant because probability more than five percent. The interest rate is significant in lag 4 but insignificant in lags 1, 2, and 3.

The optimal lags selection is based on AIC criteria, the Stata 15 adjusted automatically, in table 6.2 ARDL for optimal lags which shows the star top of coefficients average food commodities price optimal lag 4, interest rate lag 2, diesel price lag 4.

The relationship between interest rate and inflation, introduce in Irving Fisher's book "the theory of interest rate, 1930". Further, proceeding fisher, was a classical economist; one of his famous hypotheses was called the fisher hypothesis. $r = i - \pi e \ldots a$, $i = r + \pi e \ldots b$ according to this hypothesis inflation is the sum-up of real interest rate and nominal interest rate. according to this hypothesis inflation effect by nominal interest rate not real interest rate (Tunalı &Erönal, 2016) because the fact is that real interest rate is stable in the long- run and it does not affect inflation to bring change in monetary policy (Mercan, 2013). In another word, we can say that a change in monetary policy could affect the nominal interest rate, not the real interest rate (Tunalı & Erönal, 2016). The same case for the relationship between the average price of selected food commodities and interest rate

The variable of interest rate is positively associated with the average price of selected food commodities. If the interest rate increases in the same direction increase inflation. if we see the value of probability, the current month of an interest rate has no significant effect on the average price of selected food commodities while the last month shows the probability value has a significant effect on inflation probability value is 0.000 percent. Let us interpret the coefficient if a one percent change occurred in interest rate lag for four months, it will bring a change of 41 percent dependent variable of the current month positively. The same relationship of interest rate with inflation (Turna, Özcan, 2021) for turkey one percent change that occurred in interest rate it brings 0.21 percent change in inflation.

If the diesel price increase as increase the average price of selected food commodities, a positive relationship exists between the diesel price and the average of selected food commodities. The coefficient of diesel price is 0.00974; if one percent

change occurred in diesel price per gallon, it will bring a 0.00974 change in the average price of selected food commodities.

Table 6.3: Comparison of average prices of food items between PPP and PML-N based on PTI

Variable	Coefficient	Prob.
PPP	-0.21265	0.000
PMLN	-0.11862	0.000

Table 6.4: Comparison of average prices of food items between PPP and PTI based on PML-N

Variable	Coefficient	Prob.
PPP	-0.09422	0.004
PTI	0.132963	0.019

Table 6.5: Comparison of average prices of food items between PML-N and PTI based on PPP

Variable	Coefficient	Prob.
PMLN	0.112425	0.042
PTI	0.240114	0.019

For interpretation of dummy variables, we know that, take three regimes as PPP, PML-N, and PTI. Compare dummy variables with the reference group, for example, two regimes of dummy variables compare with the one regime, this one regime is called the reference group.

In table (6.3) PPP and PMLN are based on the reference group (PTI regime). The coefficient of PPP regime has -0.21265, the coefficient of PPP is negative. It means the rising average price of food items toward the reference group (PTI regime).

Categorical variables PML-N regime coefficient has -0.11862 this is also negative sign it means that rising average price of selected food items goes toward reference group PTI regime. Both regimes PPP, PML-N selected food inflation go to the PTI regime. However, if we are comparing both PPP and PML-N regimes selected food inflation, the rising average price of selected food items is relatively more in the PML-N regime than the PPP regime. The coefficient of PPP is (-0.21265) and the PMLN coefficient is (-0.11862) PPP coefficient is smaller than the PMLN coefficient.

In table 6.4 PPP regime and PTI regime based on reference, group (PML-N). The coefficient of PPP regime has -0.09422, which means that selected food inflation goes to the reference group (PML-N) while PTI regime coefficient has 0.132963; the coefficient has positive, which mean food inflation goes from reference group PML-N to PTI regime. Comparison between the PPP regime and PTI regime, selected food price inflation to come to the PTI regime while selected food items inflation away from the PPP regime.

In table (6.5) PML-N regime and PTI regime are based on the reference group (PPP). The coefficient of PML-N regime has 0.112425 and the coefficient of PTI regime has 0.240114. Both regime coefficients are positive, which means that these regimes' average price of selected food items rises in these regimes based on the reference group PPP regime. When we have compared the PML-N regime with the PTI regime, the coefficient of the PML-N regime is smaller than the coefficient of the PTI regime, which means that the average price of the selected food items price is more than the PML-N regime.

According to per results, the overall price of selected food items is more in the current regime compared to the previous two regimes. The second last selected food items inflation more in PML-N regime, in the PPP tenure selected food items inflation low, so we can conclude from the above results rising price of these specific food items links with the time trend, it not specific to the regime, it increases regime to regime.

The above result shows us in the short run while for the long run the results show that in the following table 6.5

Table 6.6: Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D	-0.034112	0.110006	-0.310091	0.7569
R	-7.792564	2.400586	-3.246109	0.0615
C	2.082202	0.322600	6.454429	0.0000

The above table 6.6 shows us long run results, first if we look it the R square and adjusted R square the values are low and the other side all the variables are insignificantly in long run, it does not make any sense.

We have run the bound test for a long-run relationship with the average selected price of food commodities, we can find out whether variables exist long-run relationship or not so the result is the following tables 6.6 mentioned below; Pesaran/Shin/Smith (2001) ARDL Bounds Test for checking the long-run relationship results in the following table

Table 6.7: ARDL Bounds Test

Null Hypothesis: No long-run relationships exist		
F-statistic	4.227	2
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
5%	3.79	4.85

In table 6.7 we have to choose a 5% critical value; the F value is 4.227700 percent; the lower bound is 3.79 while the upper bound is 4.85. We can make a decision if the f value is lower than the lower bound value we can say that the variables are no long relationship with the average price of selected food commodities. Our result shows that the f value is lying between the two bounds it is inconclusive.

6.3 Some Statistical Tests for the Model:

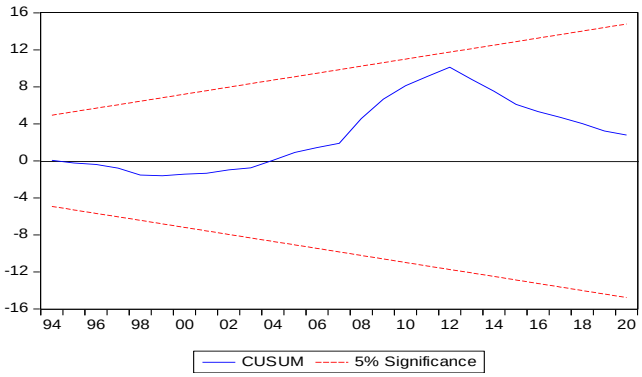

Figure 6.29 Cusum test for model stability

Recursive estimation of the error test also shows that the estimation of regression is reasonably stable over the sample period it is because the cumulative sum (CUSUM) does not touch the upper and lower line, it lies between the red lines with five percent significance, shown in the graph 5.29.

Table 6.8: Variance inflation factors

Variable	Centered
C	NA
D	2.204
R	2.646

Variance inflation factors for multicollinearity, the guideline for VIF as if the value of VIF IS greater than 10 it meant that there is multicollinearity exist if less than the value of 10 it means that no multicollinearity in the model, in our model has no multicollinearity because all value is less than 10.

Chapter 7

Conclusion and Policy Recommendation

7.1 Conclusion

The objective of the study is to compare the price of selected food items between three regimes PPP, PMLN, and PTI through graphs as well as regression of the average price of selected food items. Link price of average selected food items with interest rate and diesel price. For that purpose, we used ARDL Model. The variables we have selected are interest rate (R), diesel price (D), PPP regime, PML-N regime, and PML-N regime. The graphical explanation shows us two portions of the graphs, one has an absolute price, second has the real price of selected food items. The real price of selected food items has kept base month has July 2008. We have explained absolute and real prices of each food item separately.

We token graphs of the absolute and real average price of selected food items. The absolute price shows prices of food items raised in the current regime compared to the two previous regimes while real prices of selected food items raised in the PPP regime compare the other two regimes. For the regression analysis, we are taken the Absolute price of selected food items as dependent variable and the independent variables are diesel price, interest rate with dummy variables.

The coefficients of interest rate are (0.412) and diesel price (0.0182). The interest rate has a positive and significant effect on the average price of selected food items; coefficient of diesel price has a positive and significant effect on the average price of selected food items in short run while in the long run both the coefficient has insignificant. PPP regime, PML-N regime and PTI regime. The coefficients of PPP are (-0.212) and PMLN (-0.118) based on reference group (PTI regime). Both coefficients in negative signs, which means that the increase of absolute average price of selected food items going to reference group (PTI regime). The coefficients of PPP regime have -0.094 and PTI regime based on the reference group PML-N regime. The coefficient of PPP has negative, which means that the rise of the average price of selected food items is minimum compared to the reference group. The coefficient of PTI has 0.132, which means that the absolute average price of selected food items increased in the PTI regime. T The coefficient of PMLN and PTI is based on the reference group (PPP regime).

The coefficient of PMLN has 0.112 and PTI has 0.240. Bothe coefficients have positive and significant, PTI coefficient has more than the coefficient of PMLN which mean that the price of the absolute average price of selected food items

has more than the PMLN. Both PPP and PML-N regimes less absolute average price of selected food items than the reference group PPP regime.

7.2 Policy Recommendations

- Government should be control rising of diesel prices
- Government should be maintaining minimum rate of interest rate

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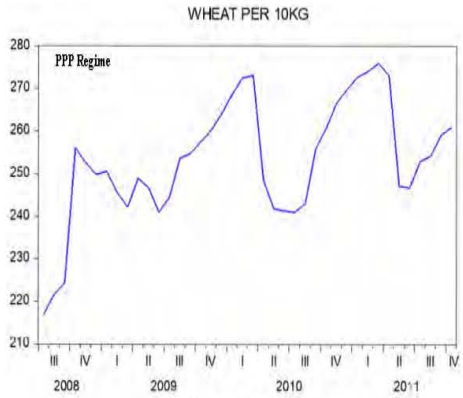
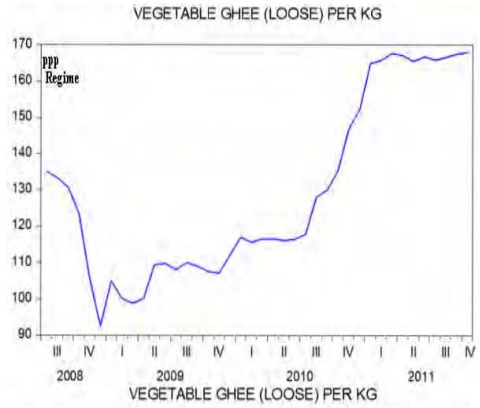
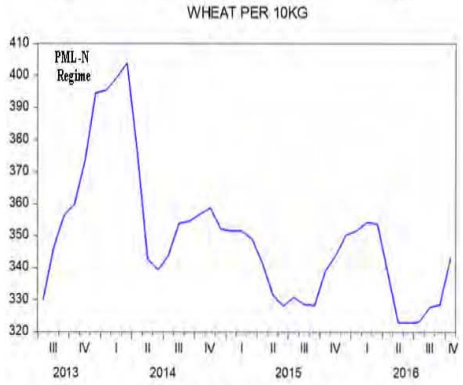
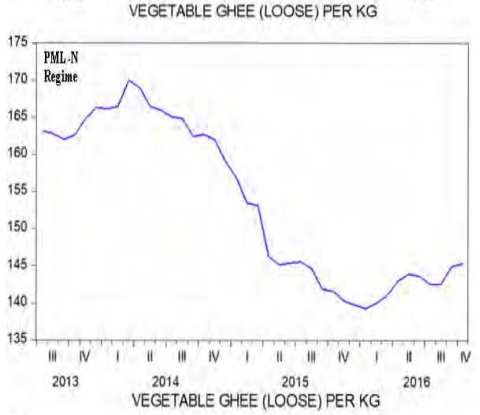
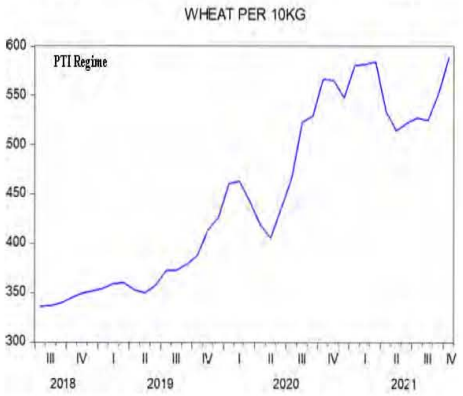
APPENDIX

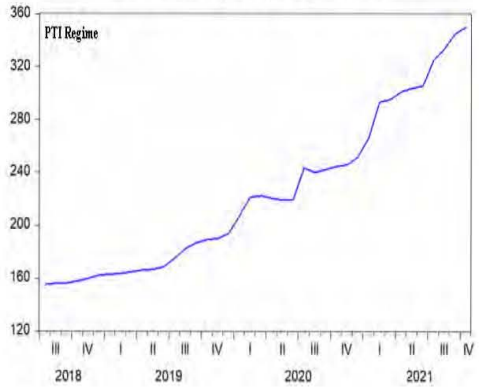

WHEAT PER 10KG
PPP Regime
280
270
260
250
240
230
220
210
III IV I II III IV I II III IV I II III IV
2008 2009 2010 2011

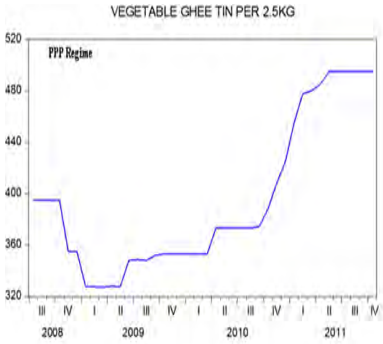

VEGETABLE GHEE (LOOSE) PER KG
PPP Regime
170
160
150
140
130
120
110
100
90
III IV I II III IV I II III IV I II III IV
2008 2009 2010 2011

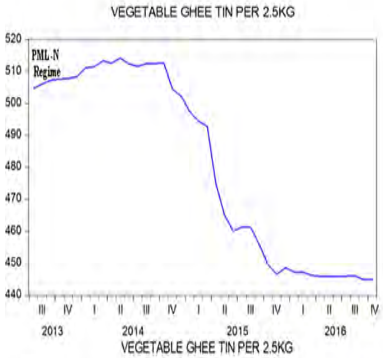

WHEAT PER 10KG
PML-N Regime
410
400
390
380
370
360
350
340
330
320
III IV I II III IV I II III IV I II III IV
2013 2014 2015 2016

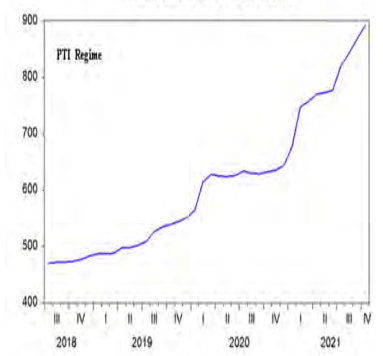

VEGETABLE GHEE (LOOSE) PER KG
PML-N Regime
175
170
165
160
155
150
145
140
135
III IV I II III IV I II III IV I II III IV
2013 2014 2015 2016

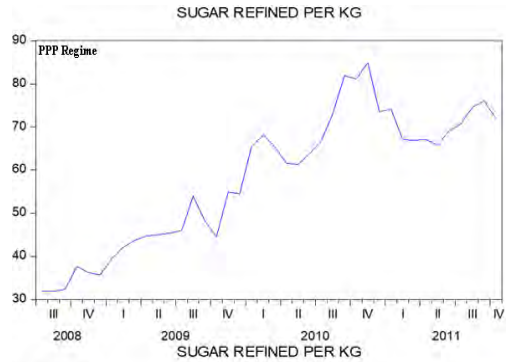

WHEAT PER 10KG
PTI Regime
600
550
500
450
400
350
300
III IV I II III IV I II III IV I II III IV
2018 2019 2020 2021

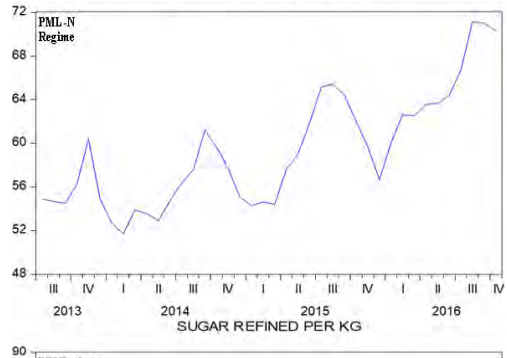

VEGETABLE GHEE (LOOSE) PER KG
PTI Regime
360
320
280
240
200
160
120
III IV I II III IV I II III IV I II III IV
2018 2019 2020 2021

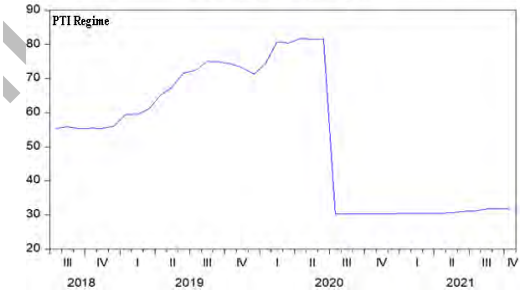

VEGETABLE GHEE TIN PER 2.5KG
PPP Regime
520
480
440
400
360
320
2008
2009
2010
2011

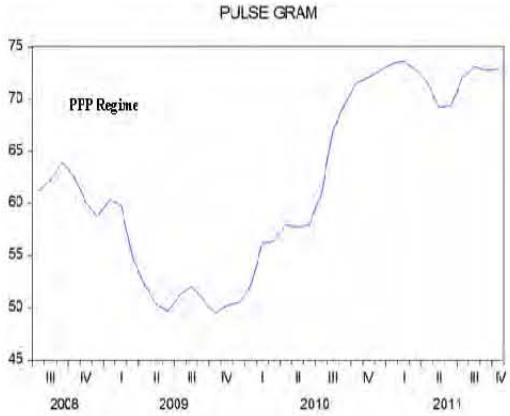

VEGETABLE GHEE TIN PER 2.5KG
PML-N
Regime
520
510
500
490
480
470
460
450
440
2013
2014
2015
2016

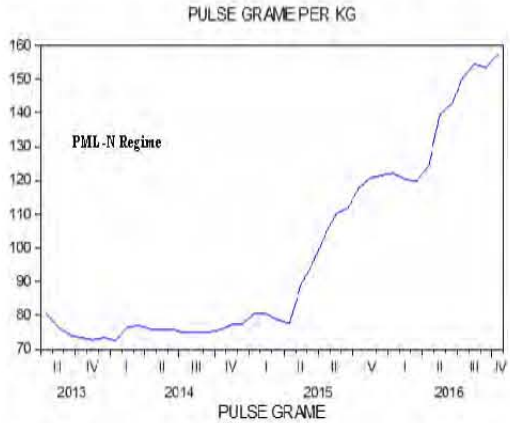

VEGETABLE GHEE TIN PER 2.5KG
PTI Regime
900
800
700
600
500
400
2018
2019
2020
2021

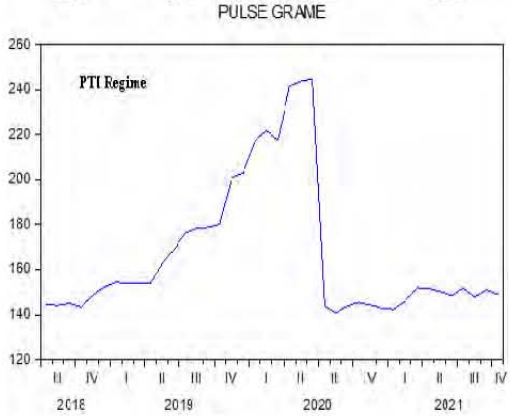

SUGAR REFINED PER KG
PPP Regime
90
80
70
60
50
40
30
2008
2009
2010
2011

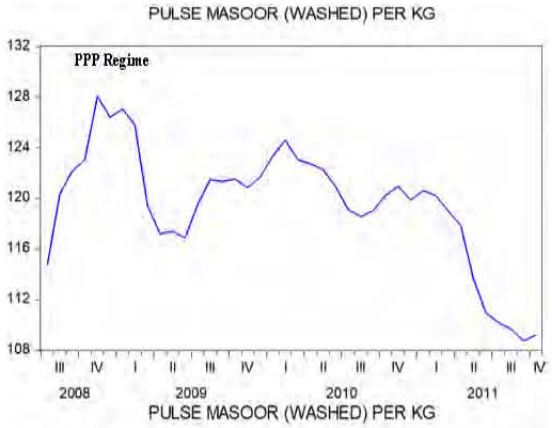

SUGAR REFINED PER KG
PML-N
Regime
72
68
64
60
56
52
48
2013
2014
2015
2016

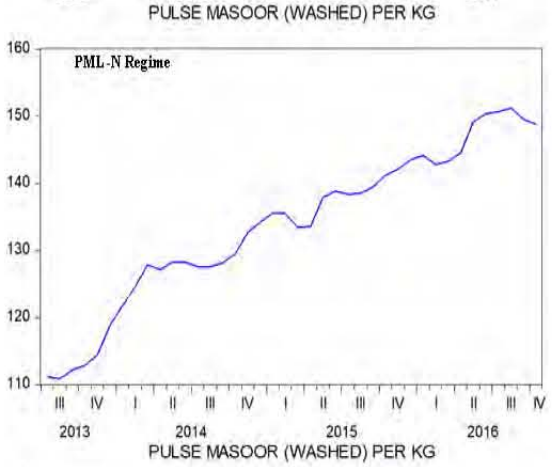

SUGAR REFINED PER KG
PTI Regime
90
80
70
60
50
40
30
20
2018
2019
2020
2021

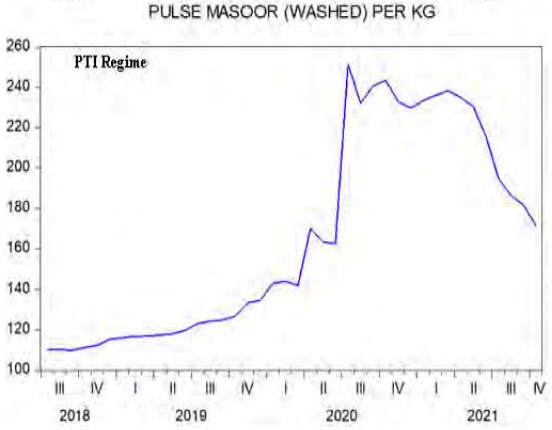

PULSE GRAM
PPP Regime
2008
2009
2010
2011

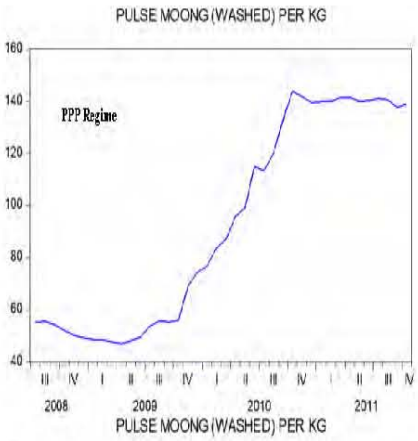

PULSE GRAME PER KG
PML -N Regime
2013
2014
2015
2016

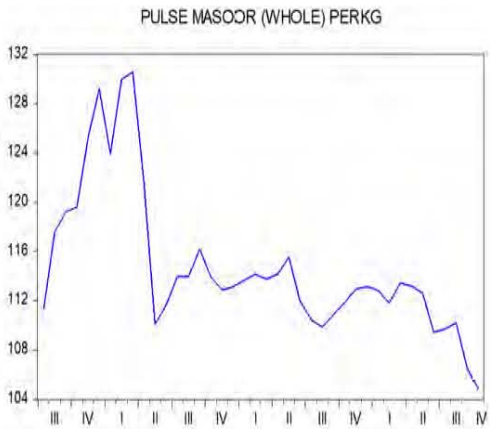

PULSE GRAME
PTI Regime
2018
2019
2020
2021

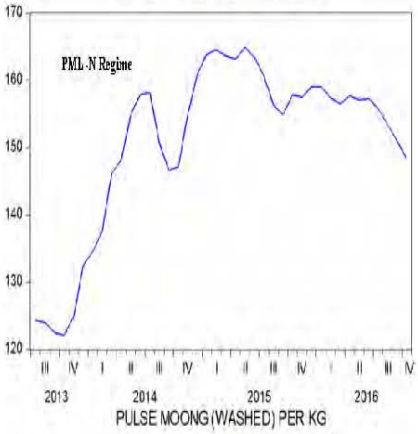

PULSE MASOOR (WASHED) PER KG
PPP Regime
2008
2009
2010
2011


PULSE MASOOR (WASHED) PER KG
PML -N Regime
2013
2014
2015
2016

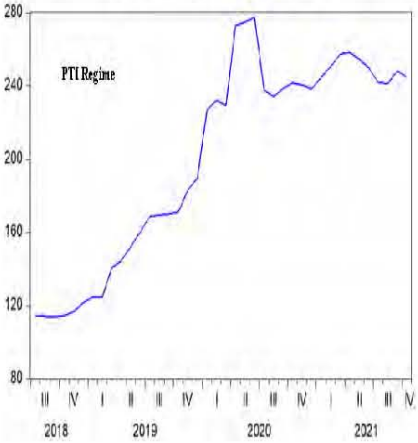

PULSE MASOOR (WASHED) PER KG
PTI Regime
2018
2019
2020
2021

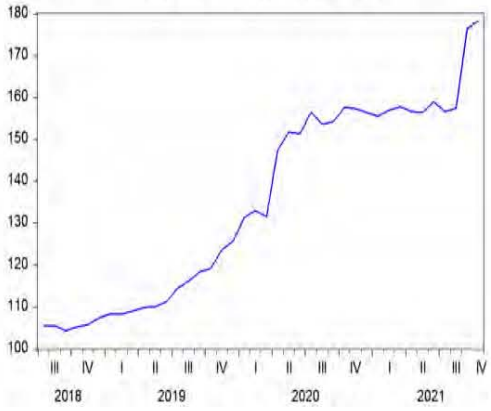

PULSE MOONG (WASHED) PER KG
PPP Regime
160
140
120
100
80
60
40
III IV I II III IV I II III IV I II III IV
2008
2009
2010
2011

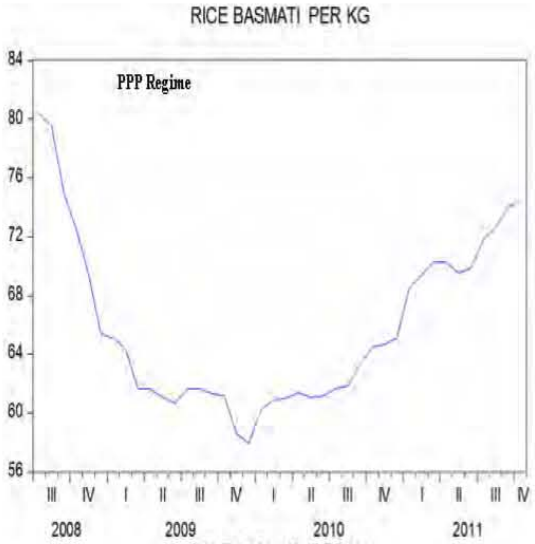

PULSE MASOOR (WHOLE) PERKG
132
128
124
120
116
112
108
104
III IV I II III IV I II III IV I II III IV
2008
2009
2010
2011


PULSE MOONG (WASHED) PER KG
PML-N Regime
170
160
150
140
130
120
III IV I II III IV I II III IV I II III IV
2013
2014
2015
2016

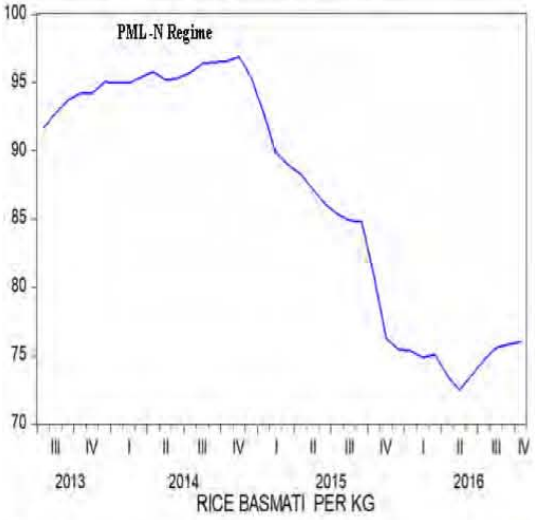

PULSE MASOOR (WHOLE) PERKG
145
140
135
130
125
120
115
110
105
100
III IV I II III IV I II III IV I II III IV
2013
2014
2015
2016

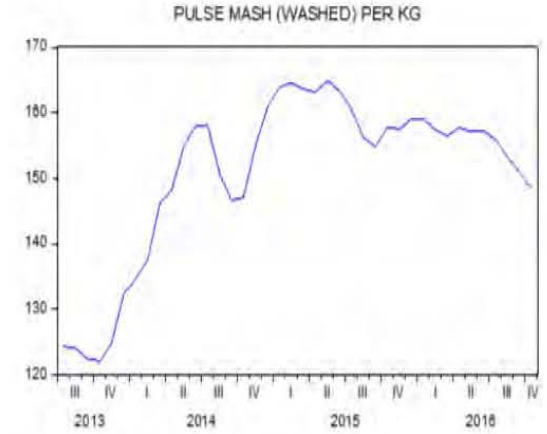

PULSE MOONG (WASHED) PER KG
PTI Regime
280
240
200
160
120
80
III IV I II III IV I II III IV I II III IV
2018
2019
2020
2021

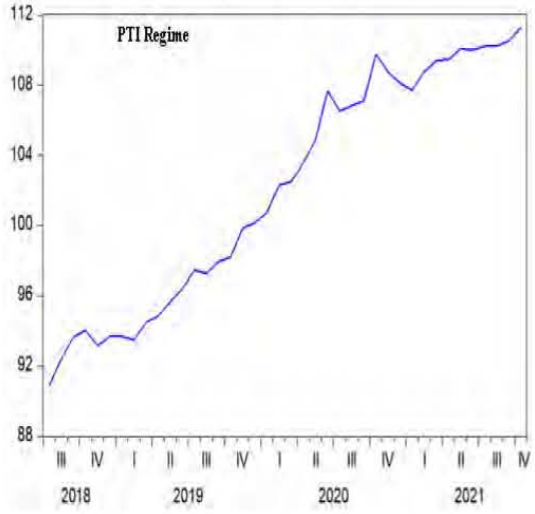

PULSE MASOOR (WHOLE) PERKG
180
170
160
150
140
130
120
110
100
III IV I II III IV I II III IV I II III IV
2018
2019
2020
2021

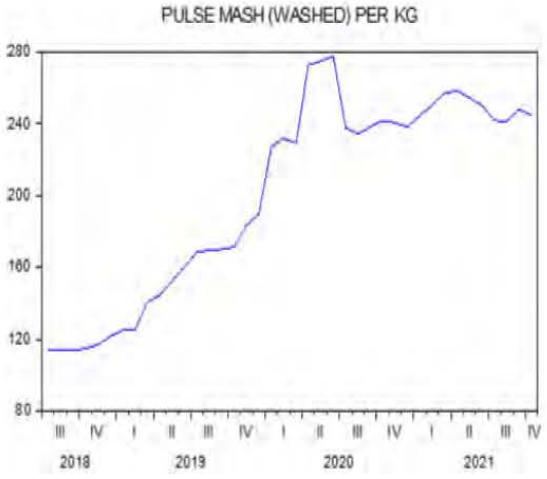

RICE BASMATI PER KG
PPP Regime
84
80
76
72
68
64
60
56
III IV I II III IV I II III IV I II III IV
2008
2009
2010
2011


PULSE MASH (WASHED) PER KG
160
140
120
100
80
60
40
III IV I II III IV I II III IV I II III IV
2008
2009
2010
2011


RICE BASMATI PER KG
PML-N Regime
100
95
90
85
80
75
70
III IV I II III IV I II III IV I II III IV
2013
2014
2015
2016

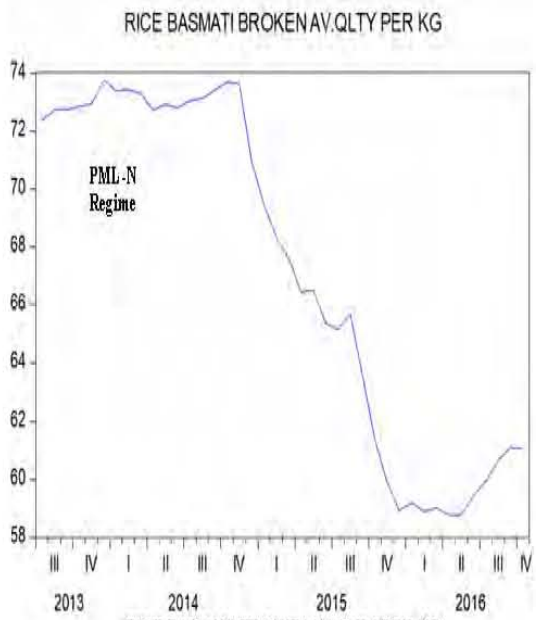

PULSE MASH (WASHED) PER KG
170
160
150
140
130
120
III IV I II III IV I II III IV I II III IV
2013
2014
2015
2016

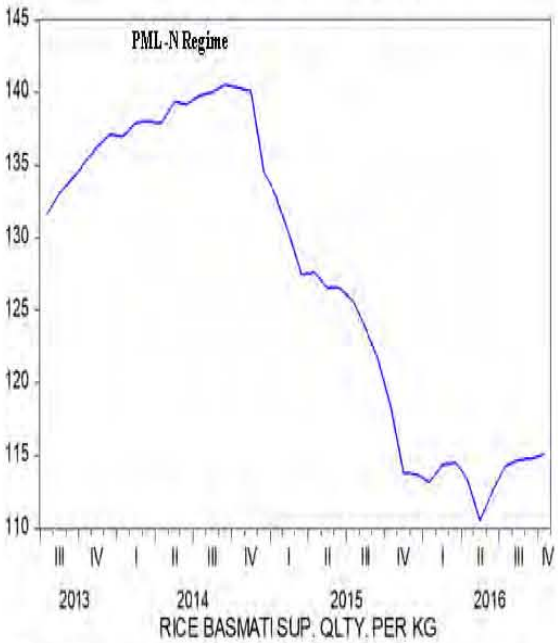

RICE BASMATI PER KG
PTI Regime
112
108
104
100
96
92
88
III IV I II III IV I II III IV I II III IV
2018
2019
2020
2021

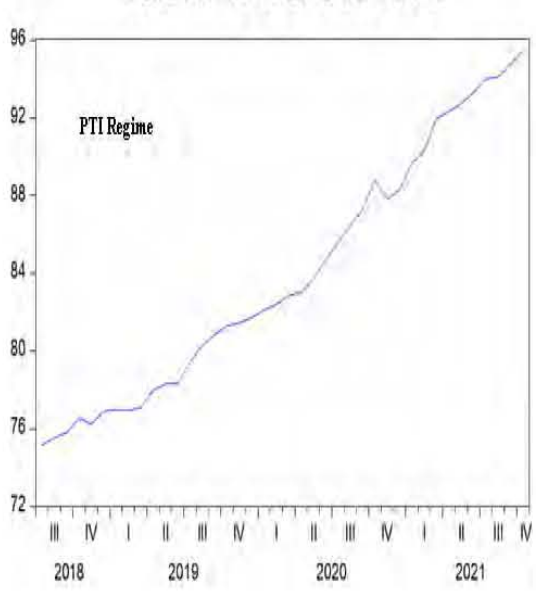

PULSE MASH (WASHED) PER KG
280
240
200
160
120
80
III IV I II III IV I II III IV I II III IV
2018
2019
2020
2021


RICE BASMATI BROKEN AV.QLTY PER KG
PPP Regime
60
56
52
48
44
40
III IV I II III IV I II III IV I II III IV
2008 2009 2010 2011

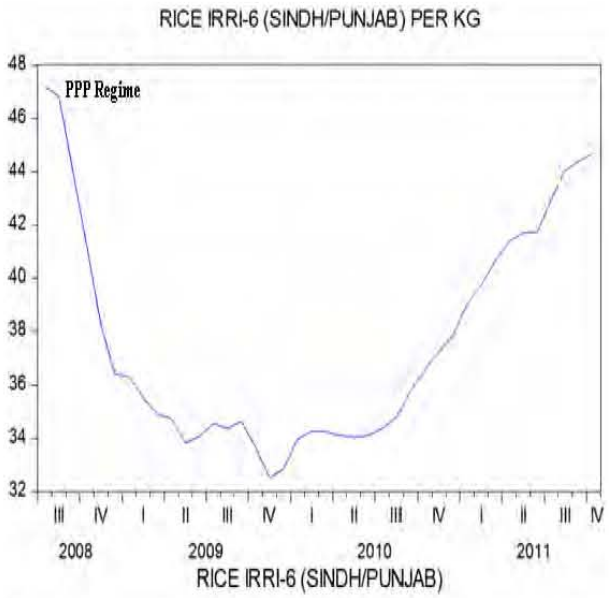

RICE BASMATI SUP. QLTY. PER KG
PPP Regime
105
100
95
90
85
80
75
III IV I II III IV I II III IV I II III IV
2008 2009 2010 2011

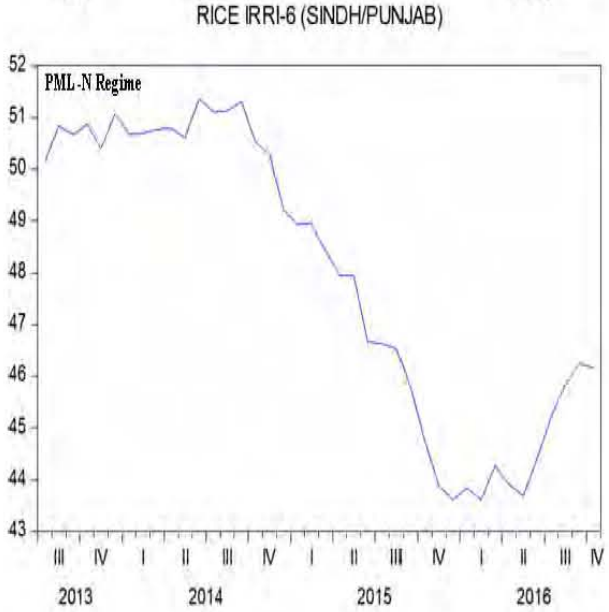

RICE BASMATI BROKEN AV.QLTY PER KG
PML-N Regime
74
72
70
68
66
64
62
60
58
III IV I II III IV I II III IV I II III IV
2013 2014 2015 2016

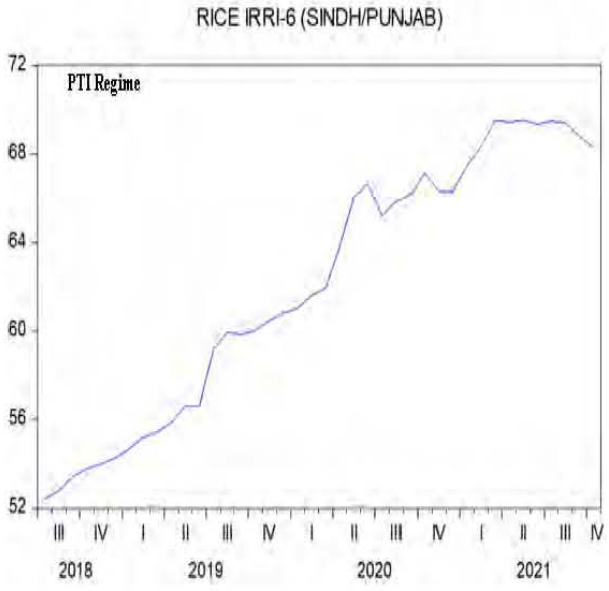

RICE BASMATI SUP. QLTY. PER KG
PML-N Regime
145
140
135
130
125
120
115
110
III IV I II III IV I II III IV I II III IV
2013 2014 2015 2016


RICE BASMATI BROKEN AV.QLTY PER KG
PTI Regime
96
92
88
84
80
76
72
III IV I II III IV I II III IV I II III IV
2018 2019 2020 2021


RICE BASMATI SUP. QLTY. PER KG
PTI Regime
170
165
160
155
150
145
140
III IV I II III IV I II III IV I II III IV
2018 2019 2020 2021


RICE IRRI-6 (SINDH/PUNJAB) PER KG
PPP Regime
48
46
44
42
40
38
36
34
32
III IV I II III IV I II III IV I II III IV
2008
2009
2010
2011


RICE IRRI-6 (SINDH/PUNJAB)
PML-N Regime
52
51
50
49
48
47
46
45
44
43
III IV I II III IV I II III IV I II III IV
2013
2014
2015
2016


RICE IRRI-6 (SINDH/PUNJAB)
PTI Regime
72
68
64
60
56
52
III IV I II III IV I II III IV I II III IV
2018
2019
2020
2021